













# THE JOURNAL OF INDIAN ART AND INDUSTRY

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[No. 113.]

## CONTENTS.

### TILE-MOSAICS OF THE LAHORE FORT.

BY

J. PH. VOGEL, PH. D.

Illustrated by seven Page Plates in Colours  
and eight Monochrome Plates.

Published under the patronage of the Government of India.

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in sun-baked summits and barren sides of hills which, not very long ago, were clothed with all the glory of tropical vegetation. It is not easy to appreciate all the mischief that has been done. The silting up of waterways alone means commercial loss to the whole country side. It also means agricultural and pastoral loss to those from whose possession the soil itself has slid away, past recovery. In many places in the Southern Konkan district good soil is only now found in depressions on the surface of the laterite rock of the district, from which it could not be washed away. The whole community must suffer also from the increased cost of fuel and timber.

It is easy, in the light of our present knowledge, to condemn the heedless policy of the past, but I doubt whether it is for us in England to cast the stone. Though England has done a great deal towards the education of scientific foresters, we have the testimony of Sir Joseph Fayrer that it makes one almost ashamed, when travelling almost anywhere on the Continent, to see how comparatively well the woods are cared for there, and how they are neglected here. "There were miles and miles," he is reported to have said, "especially in the north, where there were only little bits of cover here and there, thoroughly neglected and of no use at all except, perhaps, as shelter. There was no knowledge and no care, trees were planted and left to grow or be blown down by storms, and there was practically no re-planting."\* Such a remark would not, I think, be applicable to any rural district of British India at the present day.

It was not, however, until the increasing difficulty of meeting demands for public works indicated unmistakeably the existence of a timber famine, that the Indian Government realised the gravity of the situation. According to Dr. Schlich the remedial measures at first adopted were only "half-hearted." But when their insufficiency was made clear a special State Department was organised. The efforts which preceded that event were not, however, unimportant or without effect on subsequent arrangements. Indian botanists had long urged on the Government the necessity for establishing a regular system of forest administration and preventing, in the public interests, the continued destruction of public property of enormous value; and the dawning of a new era was marked by the appointment, in 1847, of the late Dr. Gibson to be Conservator of Forests in the Bombay Presidency. The most important duty assigned to him was the maintenance of the supply of teak for ship-building to the Government dockyard in Bombay, and his work as a pioneer of practical forestry was of special value in Western India, where he was familiarly known as "Daddy Gibson," and is still remembered with affection by the people of the Junar district above the Ghâts, where he had his headquarters. As early as in 1847 the well-known name of the late Dr. Hugh Cleghorn, who has been described as the father of scientific forestry in India, appears in a report on the proposed conservation of forests in Mysore. In the following year our Chairman, General Michael, who was then Lieut. Michael of the 39th Madras Infantry, and has been described by Sir Joseph Fayrer as the father and pioneer of practical forestry in India, was entrusted by the Government of Madras with the organisation of an establishment for working and conserving the public forests near Coimbatore and Cochin. He opened out forest roads and timber slips down the mountain passes and cleared belts of brushwood to preserve young saplings from fire. Indeed, in the Anamalai teak forests he made "the first recorded attempt to protect Indian forests from injury by annual jungle fires."† Also by giving employment to the hill tribes he secured their co-operation in his plans. In the discussion on a paper on Forestry, read by General Michael before the Society of Arts in December 1894, Sir George Birdwood referred to certain attempts in the same direction made about the same time in Bombay and Tennescrim, which, however, met with no success, partly because they were on too ambitious a scale, and partly because the ancient forest rights of the people were not sufficiently considered. "General Michael," he said, "set to work in a more modest manner and in a far more conciliatory spirit, and after six years his exertions, which completely broke down his health, were crowned with such success that the Court of Directors in London at once took up the subject warmly, and rapidly extended the Madras system of conservancy all over India and as much of Farther India as was under their rule." I trust our Chairman will forgive my quoting these words in his presence. I have felt myself bound to quote them in justice to my subject and in deference to you who look to me for a full statement of facts. In the same discussion General Michael was referred to by Sir Joseph Fayrer as "certainly one of the great benefactors of India."

No account of Indian forestry, however summary, would be satisfactory without a reference to his services. It was the enthusiasm born of a love of woodland life, innate in such men as Dr. Gibson and himself, and the out-of-door experience acquired by them and others, whether as foresters or sportsmen, and interested as such in every phase of forest craft, which really prepared a firm foundation for the stately fabric of scientific forestry raised by their successors.

(To be continued.)

\* *Journal of the Society of Arts*, vol. xliii., p. 107.

† Lieut.-Col. Bayley on "Forestry in India," *The Scottish Geographical Magazine* for 1897, p. 576.

Chinese traveller, Fa-Hian, who described the climate as neither cold nor hot. Subsequently, as settlers began to occupy fertile valleys, forest lands along the banks of the great rivers were more and more cleared for cultivation. Such a proceeding was inevitable, and it would be idle to regard it as an interference with the order of nature, for, so long as it merely met the actual needs of human beings, it was really in aid of those harmonious methods by which, during countless centuries, the earth has been fitted for human habitation. But man must now take his part in the further development of those methods, if the great end in view is not to be defeated, and if successive generations of men are to pass on the inheritance they have enjoyed, not unimpaired merely, but improved to the best of their power. Such a conception of human duty was, however, unknown to the nomadic tribes, who, according to Dr. Schlich, for a period of more than 750 years carried on the work of destruction, not only in fertile valleys, but alike on hills and plains, as they moved from one pasture ground to another. In his preface to the catalogue of the Indian exhibit at the International Forestry Exhibition, held at Edinburgh in 1884, Sir George Birdwood says that it was the destruction of vegetation over wide extended areas at the time of the troubles following the decline of the Moghal Empire which thenceforward rendered India liable to desolating droughts and the consequent calamity of often recurring famines. "In the course of time," says Lieut.-Col. F. Bailey, formerly Superintendent of Forest Surveys and Acting Inspector-General of Forests in India, and now Lecturer on Forestry in the University of Edinburgh, "not only were large areas entirely cleared for cultivation and for village sites, but more numerous flocks and herds, driven for their daily food into the jungles, led to the impoverishment of a forest belt of ever-increasing width around the occupied tracts." During the hot season dry grass, fallen leaves, and dead wood were set on fire in order to clear the ground for a fresh growth of grass for cattle, and also to simplify the pursuit of game. But such practices, with those of overcutting and digging up roots for fuel, soon destroyed the protective forest growth, and heavy rains then washed away the soil. Cows and bullocks could no longer be kept in good condition on the scanty herbage that remained, and the villagers began to keep large flocks of goats, "against whose hoofs and teeth," as Lieut.-Colonel Bailey remarks, "it is well known that forest growth cannot contend." The village goats are still formidable foes to young plantations, though, in the estimation of Sir Clements Markham, "the uneducated man," in his dealings with forests, goes far beyond the goat in his capacity for mischief.

It would be satisfactory to be able to say that a wiser policy prevailed after the establishment of British rule. But, unhappily, that was not the case for many years. "With the advent of British rule," says Dr. Schlich, "the destruction of the forests became more fierce than ever." The extension of cultivation "at the cost of the still existing forests" was carried out for many years "without any inquiry as to the ultimate effects." With the introduction of railways a further impetus was given to cultivation in the immediate neighbourhood of railway lines and stations; and, with the steady increase of prosperity under a settled Government, the demands for timber and firewood increased enormously throughout the country, and thus the reduction of forest areas went on with all its attendant evils. In illustration of the evils which attend and follow the reckless destruction of forests, especially in hilly regions, Lieut.-Col. Bailey cites the case of the outer Himalayan spurs in the Hoshiarpur district of the Panjab, where, as the rock is very friable, serious damage has been caused by denudation. Within the memory of living men these hills were well covered with forests or tall grass, and the hill streams ran evenly in well-defined channels. But the natural vegetation has now almost entirely disappeared, the hills are crumbling away, and loose rocks and stones are carried down by the streams, which are often several hundreds of yards wide, and deposited in the plains below. "Thus, not only have the hills themselves become a dismal and profitless waste, but the fertility of extensive areas of cultivation near their base has been completely destroyed by the stony deposits laid on them."\* Similar causes have produced similar effects in other parts of India. I can myself speak of some of the districts to the south of Bombay, between that great western ramp of the tableland of the Dekhan—the range of the Sahyādrī Ghāts—and the sea, a narrow, hilly tract of land known as the Konkan, and traversed by numerous streams having their sources in the Ghāts. Within living memory many of the hills were well wooded, and some of the streams were navigable by larger craft than any that can now make their way to the towns and villages on their banks. Here, as elsewhere, disastrous results have followed the destruction of forests. The mould which, in the shelter of the jungle, had been formed during centuries on the rocky surface of the hills—to which it had been bound by a living network of fibrous roots—became exposed to the full force of the monsoon rains. The average annual rainfall near the sea amounts to about 80 inches, and gradually increases till, about 30 miles inland, at the ridge of the Ghāts, which forms the watershed of the rivers flowing eastwards and westwards, it reaches an average of about 280 inches in the year. A wide view of these Konkan hills is obtained from the hill station of Mahableswar, on the crest of the Western Ghāts, at a distance of about 80 miles in a south-easterly direction from Bombay, and I well remember a conversation I once had there with Mr. Allen Shuttleworth, who for many years held with distinction the office of Conservator of Forests, from which he has lately retired. Like other officers of his Department he was full of indignation at the mischief which was being done, and spoke in indignant terms of the folly and the mischief of which the evidence lay before us.

\* See Lieut.-Colonel Bailey's "Forestry in India," *The Scottish Geographical Magazine* for 1897, page 2.





15.---Elephant piling squares of teak timber in the timber yard at the Bombay Burma Trading Corporation. Ltd., Rangoon.  
(From the India Office Photographic Record).

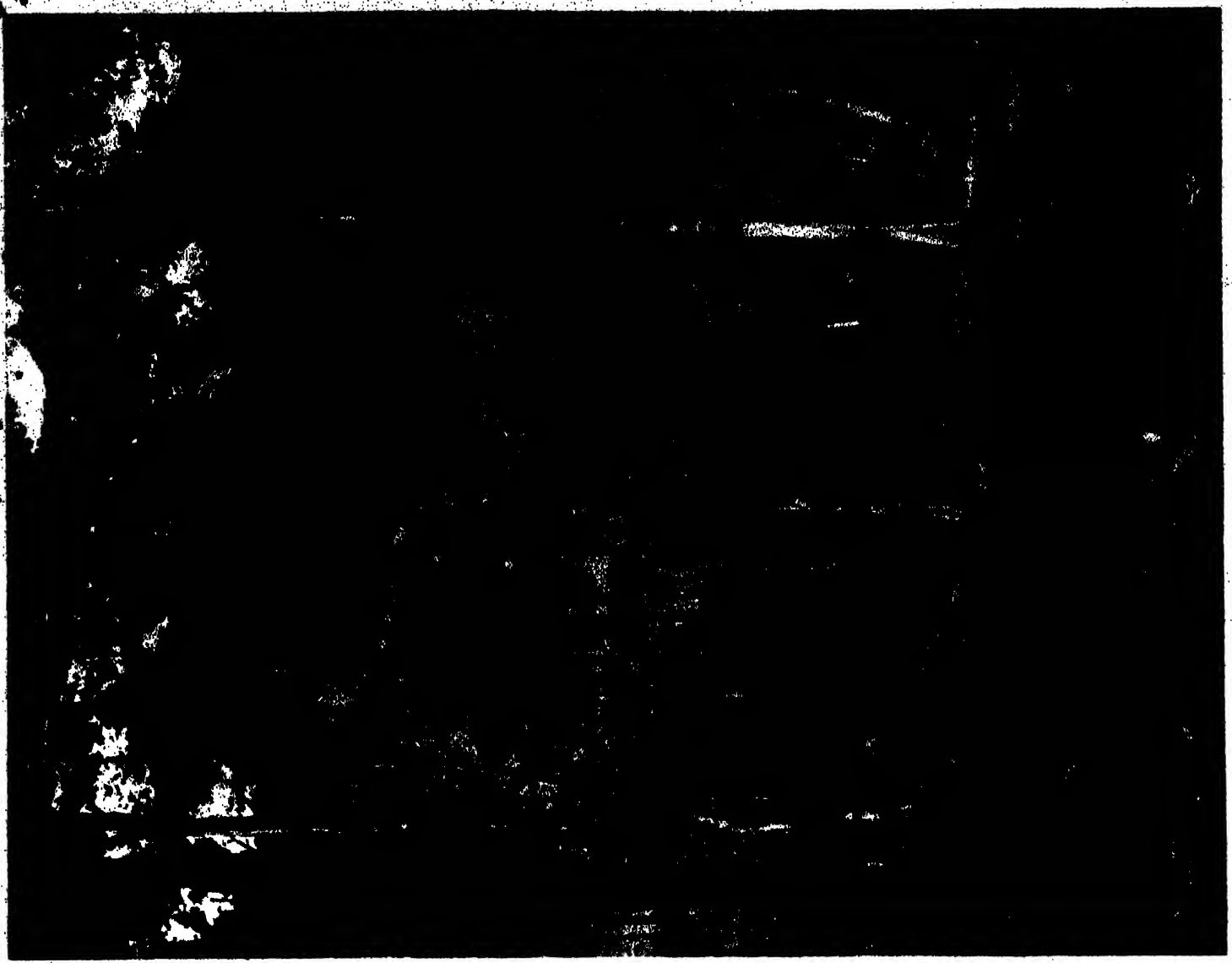




16.—Rafts of Teak Timber on the river Rangoon, alongside saw-mill of Bombay Burma Trading Corporation, Ltd., Rangoon.  
(From the India Office Photographic Record).





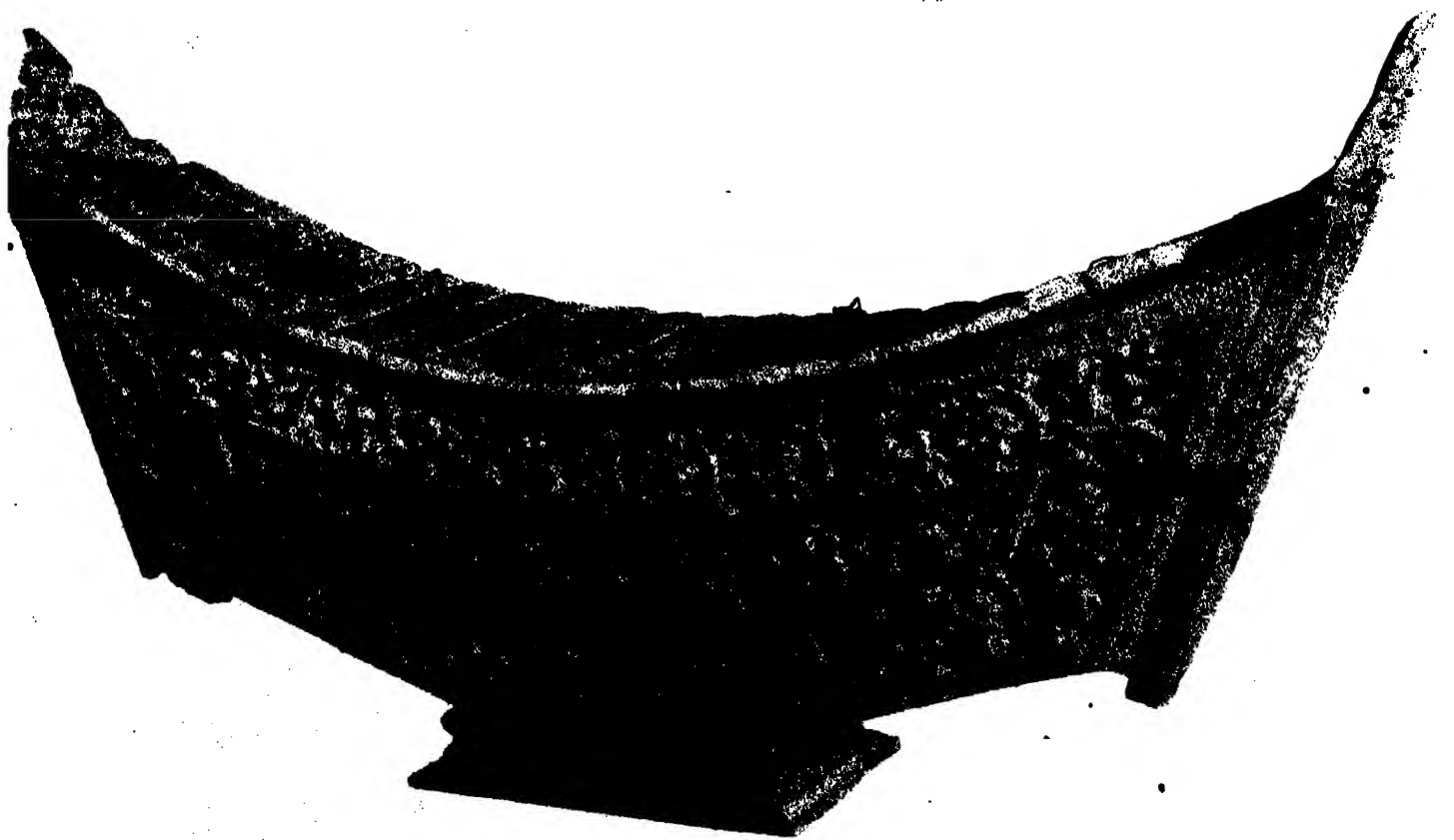


17.—*Tectona grandis*. Vigorous Taungya Teak Plant of six months growth. Stump of Teak Tree girdled and felled between 1830 and 1840, showing stump of new tree produced. (From a photograph lent by the Director of the Royal Gardens, Kew).



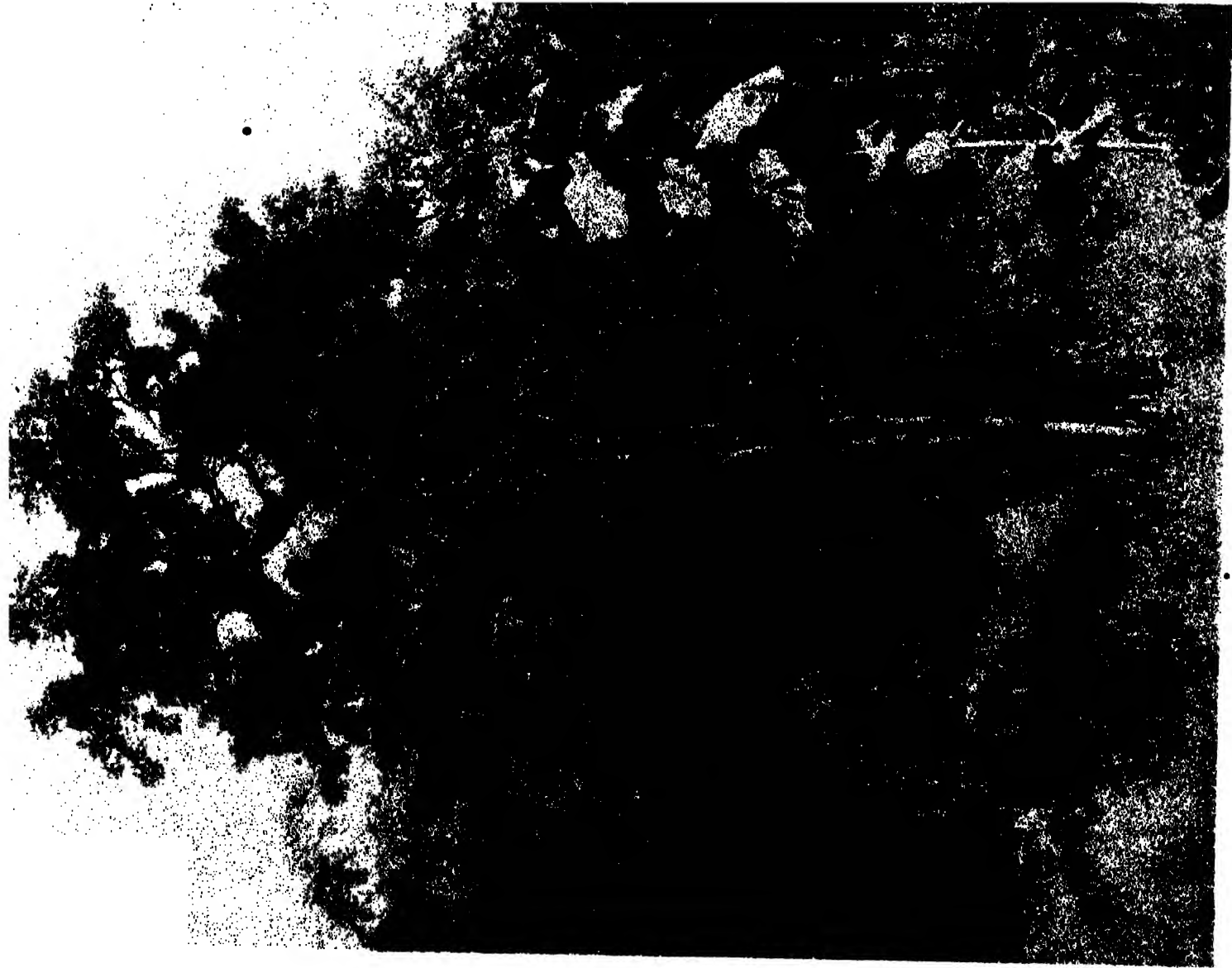


22. —*Eugenia Jambolana* Tree.

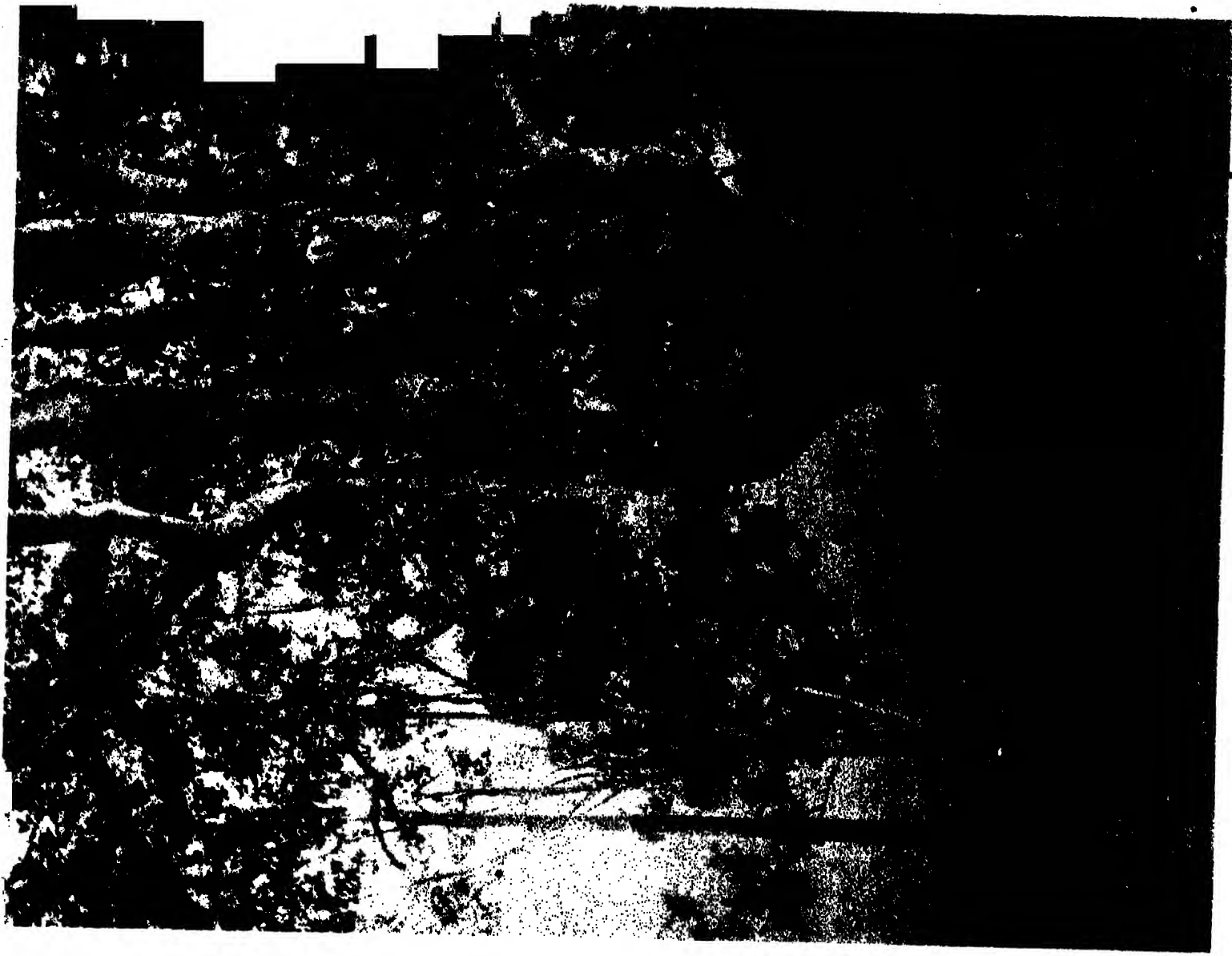


23.—Musical Instrument in Teak. (From Kew Gardens)



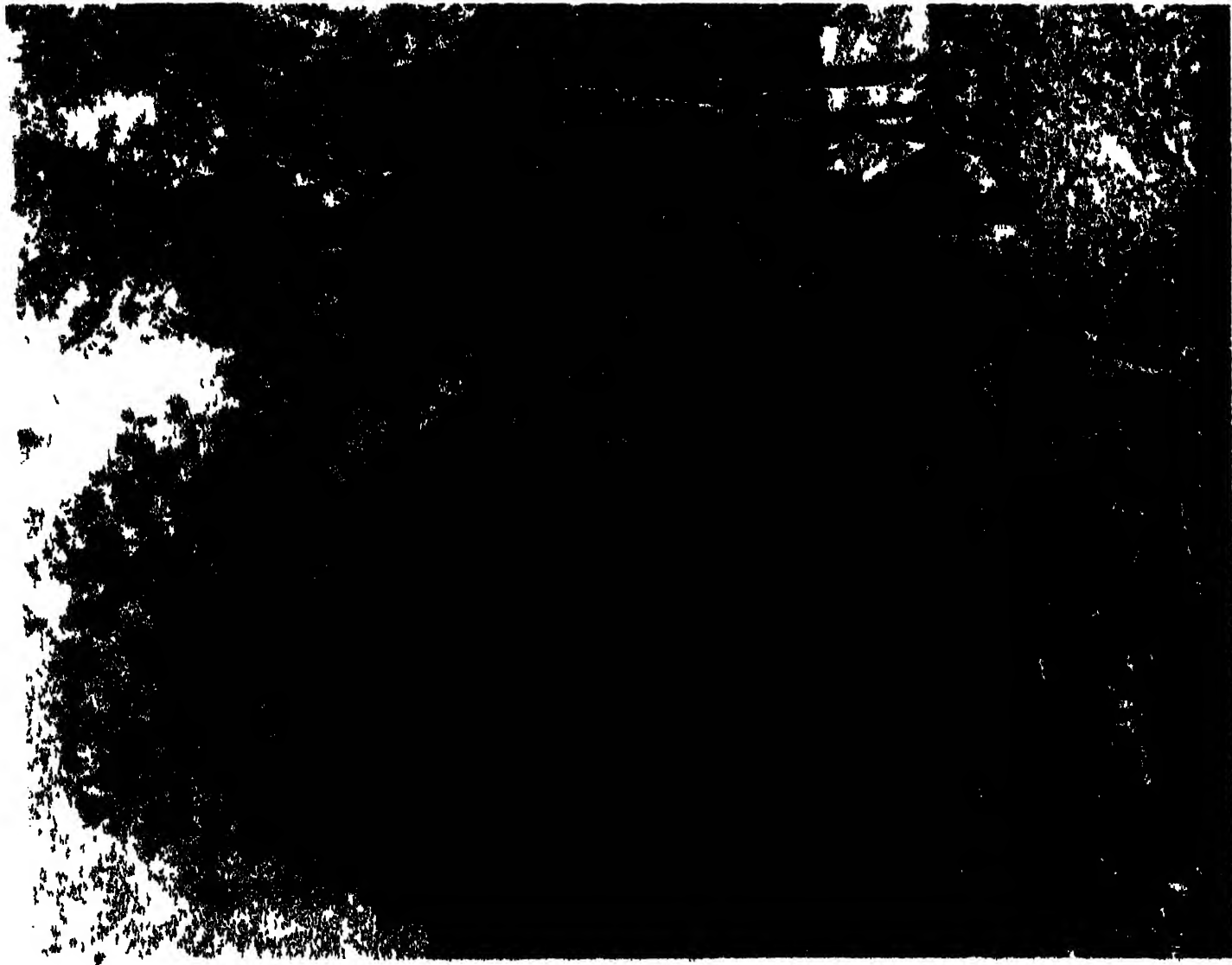


• 24—*Dalbergia latifolia*. (Rosewood or Blackwood).  
(From Kew Gardens).



• 25—*Artocarpus integrifolia*. Linn. Tree in fruit. (Jack tree).  
(From Kew Gardens)





29.—*Terminalia tomentosa*. (Asna or Sajl).  
From Kew Gardens



31.—*Mulelia Champaca* (Champa).  
From Kew Gardens





# INDEX

TO

VOLUME XI.

JOURNAL OF INDIAN ART

AND

INDUSTRY.



# INDEX.

- A.**
- Afghan carpets, 3
  - Alabar, 1
  - Antiquity of weaving, 5, 7
  - Ardebil Carpet, 9
  - Arms of Girdlers' Company, 2
  - Aryans, 10
- B.**
- Bell, Robert, 1, 2
  - Beluchistan rugs, 10
  - Birdwood, Sir George, 3, 8
  - Bushell, Dr. 6
  - Butha (cone) 6, 9
- C.**
- Cashmere—see *Kashmir*.
  - Chinese art, 6, 7
  - " influence, 7
  - Cocus or cone, 6, 9
  - Cotton carpets, 3, 7
- D.**
- Darris (rugs), 7
  - Design, 5
  - Details of carpets, 2, 8, 9, 10
  - Dyes, 9
- E.**
- Earliest form of carpet, 7
  - East as origin of European designs, 6
  - Eastern art, 5
  - East India Company, 1, 2
  - Egypt, 5
- F.**
- Felt rugs, 7
  - Floral Style, 8, 9

- G.**
- Geometrical Style, 8, 10
  - German fabrics, 5
  - Girdlers' Carpet, 1, 2, 3, 8
  - Girdlers' Company (arms of), 2
- H.**
- Herati carpets, 9
  - Hindus, 4
  - Holbein, 5
- I.**
- Imitation of Orientals, 5
  - Indian carpets, 3, 4, 7
  - Italian brocades, 5
- K.**
- Kashmir carpets, 3
  - " wool, 7
  - " shawls, 7
  - Kermes (red dye), 9
  - Khorassan carpets, 7, 9
  - Khotan industry, 7
- L.**
- Lahore, 1, 2
  - Loop pile, 8
  - Lotus flower patterns, 3
  - Lozenge patterns, 9
- M.**
- Madhakel (border), 9
  - Mihrab, 10
  - Mixed wools, 9
  - Modern carpets, 9
  - " Mogul " 8, 9
  - Multan " 7

- N.**
- " Nundahs," 7
- O.**
- Origin of European designs, 6
  - Outlining colours, 9
- P.**
- Pashm (finest wool), 7
  - Pashmina, 7
  - Persian art, &c., 3, 4, 6, 7, 8
  - Picture carpet, 8
  - Pile carpets, definition of, 7
- S.**
- Saracens, 8
  - Shawls (Kashmir), 7
  - Silk pile, 3
  - South Indian Carpets, 10
  - Styles of carpets, 5, 8, 9, 10
  - Suttringes, 3
  - Swastica, 10
- T.**
- Tanjore carpets, 3
  - Tapestry, 5
  - Trading routes and details, 6
  - Tree of Life, 10
  - Trisula, 10
  - Turkestan excavations, 7
- W.**
- Warangal carpets, 3, 9
  - Worsted for Persian carpets, 7
- Y.**
- Yarkand rugs, 10

## ILLUSTRATIONS.

### IN COLOURS.

The Girdlers' Carpet (Lahore)	-	-	1 double plate.
Hyderabad Woollen Pile Carpet	-	-	1 single "
Jaipur " " "	-	-	2 " plates.
Jaipur Woollen Carpets	-	-	7 " "
Kashmir Woollen Pile Carpets	-	-	2 " "
Lahore Woollen Carpet	-	-	1 " plate.
Mirzapur Woollen Pile Carpets	-	-	2 " plates.
Tanjore Woollen Pile Carpet	-	-	1 " plate.
Yarkand " " "	-	-	1 " "
IN MONOCHROME.			
Afghanistan Woollen Pile Carpets	-	-	5 single plates.
Agre " " "	-	-	2 " "
Arcot " " "	-	-	2 " "
Ardebil Woollen Carpet (Persian)	-	-	1 " plate.
Bangalore Woollen Pile Carpets	-	-	2 " plates.
Beluchistan " " Carpet	-	-	1 " plate.
Dera Ismail Khan Woollen Pile Carpet	-	-	1 " "
Elura Woollen Carpet	-	-	1 " "
Hyderabad Cotton Pile Carpet	-	-	1 " "

### IN MONOCHROME—continued.

Hyderabad Woollen Pile Carpet	-	-	1 single plate
Kashmir Woollen Pile Carpets	-	-	7 " plate:
" " Carpets	-	-	4 " "
Lahore " " "	-	-	11 " "
" " Pile Carpet	-	-	1 " plate.
Madras Silk Pile Carpet	-	-	1 " "
Mirzapur Woollen Pile Carpet	-	-	1 " "
" " Carpet	-	-	1 " "
Mogul Woollen Pile Carpets	-	-	8 " plate:
Multan " " Carpet	-	-	1 " plate
" Cotton Carpets	-	-	2 " plate
Punjab Woollen Pile Carpets	-	-	3 " "
Thana Rug	-	-	1 " plate
Vellore Woollen Pile Carpet	-	-	1 " "
Warangal " " "	-	-	1 " "
" Silk Pile Carpets	-	-	4 " plates:
Woollen Pile Carpets	-	-	3 " "
Yarkand Silk Pile Carpet	-	-	1 " plate
" Woollen Pile Carpets	-	-	14 " plate



**NOW READY.**

# THE THIRTY-SEVEN NATS,

A Phase of Spirit-Worship prevailing  
in Burma.

BY

SIR RICHARD CARNAC TEMPLE, BART., C.I.E.

IN this work the story of the Spirit-worship of the Burmese races is explained in all its forms and the difference between the indigenous and imported varieties is clearly shown. The extent to which each variety overlaps and influences the rest is also fully brought out. In this way, an important part of Burmese social life, explaining many of the notions and beliefs of the people, usually hidden from the European observer, is made accessible to enquirers.

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# THE JOURNAL OF INDIAN ART AND INDUSTRY

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## CONTENTS.

### Indian Timbers.

The Hill Forests of Western India.

BY

HERBERT MILLS BIRDWOOD, C.S.I., L.L.D., M.A.

Illustrated by eleven Page Plates in Colours and one  
Page Plate in Monochrome.

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It was from the city of Edinburgh, with its grand botanic gardens and its long array of men of science—prominent among them, in our own time, in connection with much that relates to the science of forestry, being Professors James Hutton Balfour and Bayley Balfour—that the effective impulse was received which determined the further development of the Forest Department. In 1850 the British Association met in Edinburgh and appointed a Committee to consider the probable effects, from an economic and physical point of view, of the destruction of tropical forests. In the following year the Committee presented at Ipswich a report which embodied the general conclusions and recommendations arrived at, and demonstrated clearly the importance of preserving every condition tending to maintain an equilibrium of temperature and humidity, of preventing the disappearance of indigenous forests from the wasteful habits of the people, and of taking the requisite steps for extending forest produce. The weighty evidence adduced by the Committee, and the broad views enunciated by them, so impressed the Court of Directors that, within a few years, regular establishments were sanctioned for the Madras Presidency and British Burmah. In 1856 Dr. Cleghorn took up General Michael's work, and was appointed Conservator of Forests in Madras, with Captain Douglas Hamilton and Lieutenant Beddome as his assistants, who in turn succeeded him in the office of Conservator after his transfer, first to Bengal, where he gave most efficient aid to Dr. Brandis in carrying out forest conservancy, and afterwards to the Punjab. According to Colonel Bailey, Dr. Cleghorn checked the destructive practice of temporary cultivation in the Madras forests notwithstanding the opposition he encountered. He was ultimately successful "because his well-known desire to promote native interests inspired the rulers of the country with confidence in his proposals." In 1856 also, Dr. Brandis (now Sir Dietrich Brandis, K.C.I.E.) was appointed Superintendent of Forests in Pegu, and six years afterwards was placed on special duty with the Government of India. He was the first Inspector-General of Forests to the Government of India, and held the office till 1881, when he went on special duty to Madras. His book on the Forest Flora of North-Western and Central India is a standard work, greatly prized by Indian botanists and foresters. "From the time of his appointment," says Sir George Birdwood, in his preface to the catalogue of the Indian exhibit at the International Forestry Exhibition, already referred to, "the successful future of forest conservancy in India was assured. . . . He, in fact, by his great capacity, his wise recommendations, and his personal example of enthusiastic devotion to duty, has made the Forest Department of India what it now is." We owe to Dr. Brandis, among other important services, the suggestions for the various Indian Forest Acts, which, while strengthening the hands of the Government, have secured to the people the maintenance of all the ancient rights and privileges inherited by them from time immemorial; and also the inauguration, in 1866, of arrangements for the annual supply of trained officers to discharge the duties of assistant conservators of forests in India. At first these officers were educated in France and Germany. In 1876 the student candidates were withdrawn from Germany and stationed at Nancy under an English officer. In 1885 Dr. Schlich (who had succeeded Dr. Brandis on his retirement) organised the Forest Branch of the Royal Indian Engineering College on its present footing at Cooper's Hill.

While candidates with special qualifications for the higher grades of the Forest Department are, with some exceptions, now recruited from England, it is obvious that there must be much important work connected with the executive charge of the forest ranges, into which the larger divisions are split up, the disposal of which the Government of India must entrust to officers trained in India itself. The class of Forest Rangers has been described as the "backbone" of the Department. Candidates for this branch of the forest service are trained at the Imperial Forest School at Dehra Dun, which is attended by students from all parts of India. A certain number of forest appointments has also been guaranteed annually by the Government to the students of the College of Science at Poona. A protective service of Forest Guards is also employed for the purpose of patrolling forests and ensuring compliance with forest regulations. The members of this branch of the service receive no professional training.

The Indian Forest Service thus organised has been able not only to meet the demands of India, but to help other countries also. Ceylon, New South Wales, New Zealand, the Cape, Mauritius, Jamaica, and Cyprus, as General Michael, in his paper on Forestry tells us with just pride, have all borrowed officers from India to put them in the way of organising conservancy and working their forests economically. The head of the Forest Department at the Cape and the Conservator in Ceylon are both Indian forest officers. The United States of America have also recognised the value of the work done in India by lately deputing an expert to study the methods there in force.

The forests to which the Indian Forest Act of 1878 is applicable include "reserved forests," which are State property, or over which the State has certain rights; "village forests," assigned or yet to be assigned by the Government to village communities from reserved forest areas; "protected forests," which, as regards the proprietary rights of the State, are on the same footing as reserved forests, but are subject to less stringent supervision—only certain kinds of timber being protected, and all private rights of cultivation, pasturage, and wood-cutting within the protected area being respected; and, lastly, "private forests," which are controlled only to such an extent as is necessary for their regulation or protection for certain special purposes. The Forest Department has also the control of State plantations of timber trees.

The area of British India, exclusive of the Native States, is about 960,000 square miles; and of this area, more than 79,000 square miles had been constituted as reserved forests before the end of the year 1896-7. About 9,000 square miles were "protected," and nearly 26,000 square miles were tabulated as "unclassified." The total area under the control of the Forest Department amounted, therefore, to about 114,000 square miles, inclusive of about 8,100 square miles leased from Native States. Of this area, which is only about 7,000 square miles less than that of the British Isles, about 32,000 square miles are closed to all animals, and about 41,000 to browsing animals only. I am unable to give any exact statistics as to village forests and private forests, but it has been estimated that the area of private forests and forests belonging to corporations and endowments is about equal to that of the State forests, and that the total area of forests of all kinds is about 25 per cent. of the total area of British India. In Great Britain and Ireland the corresponding percentage is only 4. The corresponding figures for Europe and the United States of North America are 31 and 17 respectively. In European countries the highest percentage is reached in Servia, where it is 48; in Russia and Sweden it is 42; in Austria, 33; in Hungary, 29; in Germany, 26; in Norway, 25; and in Turkey (including Bulgaria, Bosnia, and Herzegovina), and also in Roumania and Italy, 22. In Switzerland, Spain, France, Greece, and Belgium, it lies between 19 and 15. In Holland it falls to 7, in Denmark to 6, and in Portugal to 5. Great Britain and Ireland thus show the lowest percentage of all the countries named, while India comes seventh in the list, being bracketed with Norway.\*

The area of plantations directly under the Government of India and the Government of Madras is said to extend to 41,000 acres. In the Bombay Presidency the afforestation of waste tracts has been pushed with vigour, but I am unable to give the acreage. One of the plans adopted by Mr. Shuttleworth in the central division—as he has personally explained to me on the site of some of his operations on the hills near Poona—has been to sow the seeds of all kinds of forest trees and shrubs broadcast on the ground. The results of the annual sowings have been satisfactory, except in seasons when the rainfall has failed at the close of the monsoon. Hill tops and stony valleys, which, twenty years ago, were bare and unsightly, are now well covered with innumerable saplings and most refreshing verdure. Similar results have been obtained on many of the rocky hills of the Dekhan.

The review of Forest Administration in British India for the year 1896-7, by Mr. B. Ribbentrop, C.I.E., Inspector-General of Forests, shows that in that year, which is the latest for which I have any report, the State forests yielded more than 47,000,000 cubic feet of timber, nearly 100,000,000 cubic feet of firewood, nearly 135,000,000 bamboos, and minor produce to the value of nearly 3,250,000 rupees.

In the same year the exports from British India to foreign ports included 64,221 tons of teak wood, valued at nearly 7,000,000 rupees; sandalwood, ebony, and other ornamental woods, worth nearly 600,000 rupees, and such minor produce as caoutchouc, lac, lac-dye, cutch and gambier, myrobalams and cardamoms, worth about 21,000,000 rupees.

The total value of exports, which reached nearly 28,500,000 rupees, was less by 6,500,000 rupees than the total value for the preceding year, the decrease being due almost entirely to the disastrous effects of plague and famine.

The gross revenue realised from forests during the year 1896-7 amounted to nearly 18,000,000 rupees, the surplus over expenditure having been 8,000,000 rupees. More than 17 per cent. of the gross revenue represented the estimated value of forest produce given away free or at reduced rates to right-holders and free grantees. When it is remembered that before 1848 the forest revenue, which was treated as a branch of the land revenue, was very trifling, the progress made in the past fifty years is very remarkable. But, as most truly observed by Sir George Birdwood, in the paper from which I have already quoted, "the annual revenue which forest conservancy has as yet provided is utterly insignificant when compared with the capital value of the Indian forests redeemed by the British Government from certain destruction."

It would indeed be strange if such results had been achieved without opposition. I have already spoken of the conciliatory course adopted with obvious advantage by some forest administrators towards those whose privileges were affected by the stringency of the new regulations. Villagers on the outskirts of forests had for generations cut firewood and grazed cattle therein, and cleared patches for cultivation without hindrance. The policy aimed at has been to stop the exercise of privileges incompatible with the continued existence of forests, and to allow others as far as possible. But the necessity for a restrictive policy at all, while necessarily distasteful to right-holders, was not readily accepted as right by the local officers of the Indian Civil Administration, with whom it has always been an honourable tradition to seek above all things the happiness and contentment of the people. They were unable to look with favour on measures which seemed to indicate an excess of zeal on behalf of the State, and to be in needless derogation of privileges long enjoyed without much apparent injury to public interests. It has been suggested that though the accumulated mischief, caused by neglect of conservancy during a long series of years, is incalculable, yet it is not possible always to detect any

\* Schlich's "Manual of Forestry," vol. i., p. 54.

34.--*Aquilaria agallocha* A large evergreen tree of Sylhet Wood soft, even-grained, and scented when fresh cut.  
In old trees are masses of harder and darker wood, which is the famous Eagle-wood of commerce MANSON.

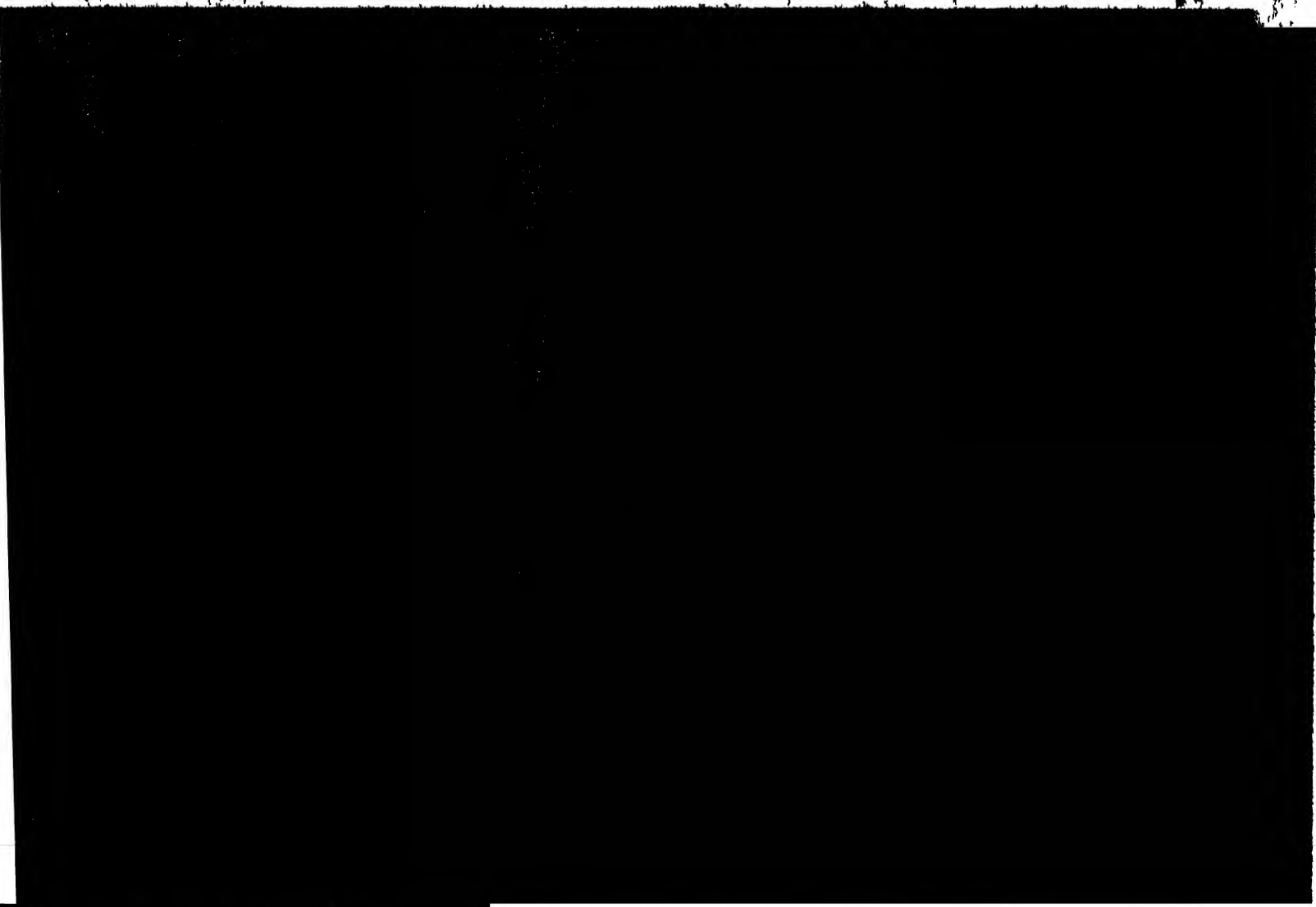
35.--*Terminalia delavaya* A large deciduous tree growing in the forests of India and Burma. Wood yellowish-  
green, hard, no heartwood. Weight about 48 lbs. per cubic foot. MANSON.



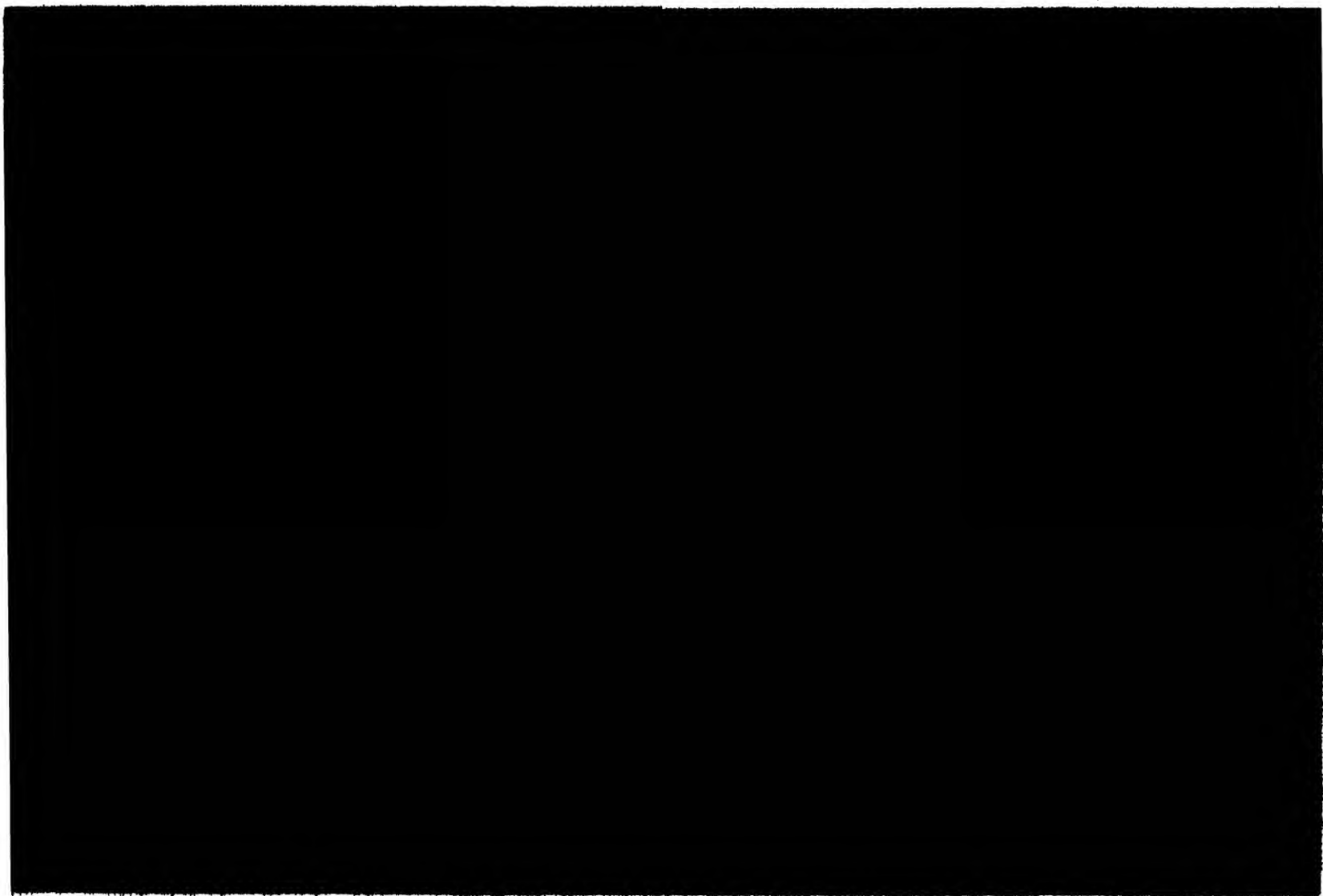
37.—*Cedrus libani* var. *Deodara*. A very large evergreen tree. Bark greyish-brown, with numerous fissures, which give a reticulate appearance. Wood fairly hard, strongly scented, and oily. GAMBLE.

38.—*Cinnamomum glanduliferum*. (Nepal Camphor wood.) A large tree of South Himalaya and Assam. Wood rough, pale-brown, and highly scented, with a strong smell of camphor when fresh cut. MANSON.





37.—*Cedrus libani* var. *Deodara*. A very large evergreen tree. Bark greyish brown, with numerous fissures, which give a reticulate appearance. Wood fairly hard, strongly scented, and oily. GAMBLE.



38.—*Cinnamomum glanduliferum*. (Nepal Camphor wood.) A large tree of South Himalaya and Assam. Wood rough, pale-brown, and highly scented, with a strong smell of camphor when fresh cut. MANSON.





32. *Juniperus horizontalis* (White Cedar.) A very large tree. The colour of the wood is white, shading  
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appreciable damage done in a particular locality during a short period. Such a consideration alone might partly explain the tendency to reject as idle the fears of experts, and to resent measures savouring of harshness and productive of discontent. In course of time, as forest management became stiffened and matured, friction was undoubtedly developed, and gave rise to difficulties. One of the purposes of the Forest Act of 1890 was to give effect to recommendations for reconciling legitimate local demands with State requirements which were made by the Bombay Government on a consideration of the Report of a Forest Commission appointed with the object, as publicly declared by Lord Reay, of substituting "co-operation for antagonism, confidence for distrust, contentment for disturbance." The Bombay Government has recognised the principle that the central authority in forest matters, so far as the interests of the people are concerned, shall be the Commissioner of the Civil Administrative Division, and that the Forest Department cannot be regarded as the rival of the Revenue Department in respect of such matters. You will not expect me to give any details in illustration of the practical working of this principle. The result has been to bring the Forest Administration into closer union with the general Civil Administration of the country, to remove many causes of complaint, and to place forest work altogether on a sounder footing.

The particular area of which I spoke at the beginning of this paper is within easy reach of the City of Bombay. It includes hilly tracts of country on either side of the range of the Western Ghâts, in the Dekhan and Konkan respectively, between the latitudes, roughly speaking, of Bombay and Satara. As compared with other forest areas elsewhere in the Presidency, it is by no means remarkable, so far as the production of valuable timber is concerned; but it is of interest as illustrating generally the methods of the Forest Department; and it is of special interest to the inhabitants of Bombay and many other cities in the plains, as it includes the two popular hill stations of Matheran and Mahableshwar, which owe much of their value as health resorts to their pleasant woods and abounding undergrowth of beautiful shrubs and flowering plants and ferns, which everywhere keep the ground cool and the air sweet and fresh. Both in climate and splendour of wild woodland scenery they furnish an instructive contrast with those hills of the same tract which have suffered from the destruction of forests in the manner I have already described. An account of the forest flora of Matheran and Mahableshwar will apply generally to similarly preserved portions of the Western Ghâts and the adjoining regions; and, in the time that is left us, it will be sufficient, perhaps, if I deal only with the flora of these two hills. Their vegetation is not indeed identical. Dr. Theodore Cooke, formerly principal of the College of Science at Poona and an accomplished botanist, who always found his "pleasure in the pathless woods" whenever he could escape from college lectures, has estimated that, exclusive of grasses, about 140 flowering plants are found at Matheran which have not been seen at Mahableshwar, and 130 at Mahableshwar which have not been seen at Matheran. Some of the conditions which regulate the distribution of plants are not indeed equally operative at both places. Mahableshwar is about seventy miles nearer the equator than Matheran. The latter is an isolated hill rising from the plain of the Konkan, midway between the Ghâts and the sea; whereas Mahableshwar is further from the sea, and is, to all intents, a part of the range of Ghâts. The highest point of Matheran is about 2,500 feet above the sea-level, whereas the Mahableshwar plateau is at a general elevation of 4,500 feet above the sea, and rises at one point to 4,700 feet. These differing conditions are not without their effect. Some plants are found at Mahableshwar which will not thrive on the lower mountain top. Some Matheran plants, on the other hand, find the higher levels of Mahableshwar beyond their range. I will give a few instances. The most casual observer is struck by the wonderful undergrowth of brake-fern at Mahableshwar, and of the arrow-root plant—which in October and November blooms on almost every square yard of the jungle—and by the beautiful profusion of the *Osmunda* fern, mixed with clustering roses and willows, along the upper stream of the Yenna river. At Matheran the brake-fern is scarcely known. In a few years it will be extinct, if it is not already so; for being rare it has been the prey of thoughtless fern-hunters and cannot defy their onslaughts. It would be impossible for any number of fern-hunters to destroy it at Mahableshwar, and so it is left alone. Even if unmolested at Matheran it drags on at best but a feeble existence. The site is too low for it, the lowest limit of its range in the latitude of Bombay being apparently a little more than 2,000 feet above the sea-level. The *Osmunda*, again, is not known at Matheran, nor is the Willow (*Salix tetrasperma*), nor the Arrow-root (*Hicchemia caulina*), though other allied plants of the order *Scitamineæ* are plentiful enough. On the other hand, there are some well-known Matheran trees, such as the Kumbha (*Careya arborea*), the Maha or Indian ebony (*Diospyros assimilis*), and the Chandara (*Moronegga Roxburghii*), which do not grow on the Mahableshwar plateau at all. But after full account is taken of all divergences, it is found that many plants are common to the two hills. Such a coincidence is favoured by the practical identity of their geological formation, and by the circumstance that there is no great difference in the range of their mean temperature at different seasons and in their rainfall. Both Mahableshwar and Matheran are huge masses of trap, capped by a thin layer of laterite. Both are within sight of the sea. Both are swept by the same dry winds in the cold weather, and by the same monsoon storms, and both enjoy the full benefit of the monsoon rains. The average temperature ranges at Mahableshwar from 63.3° Fahr. to 71.7°, and from 67.8° to 73.5° at Matheran. The average annual rainfall at Mahableshwar amounts to 281.4 inches, and at Matheran to 224.7 inches. Under such

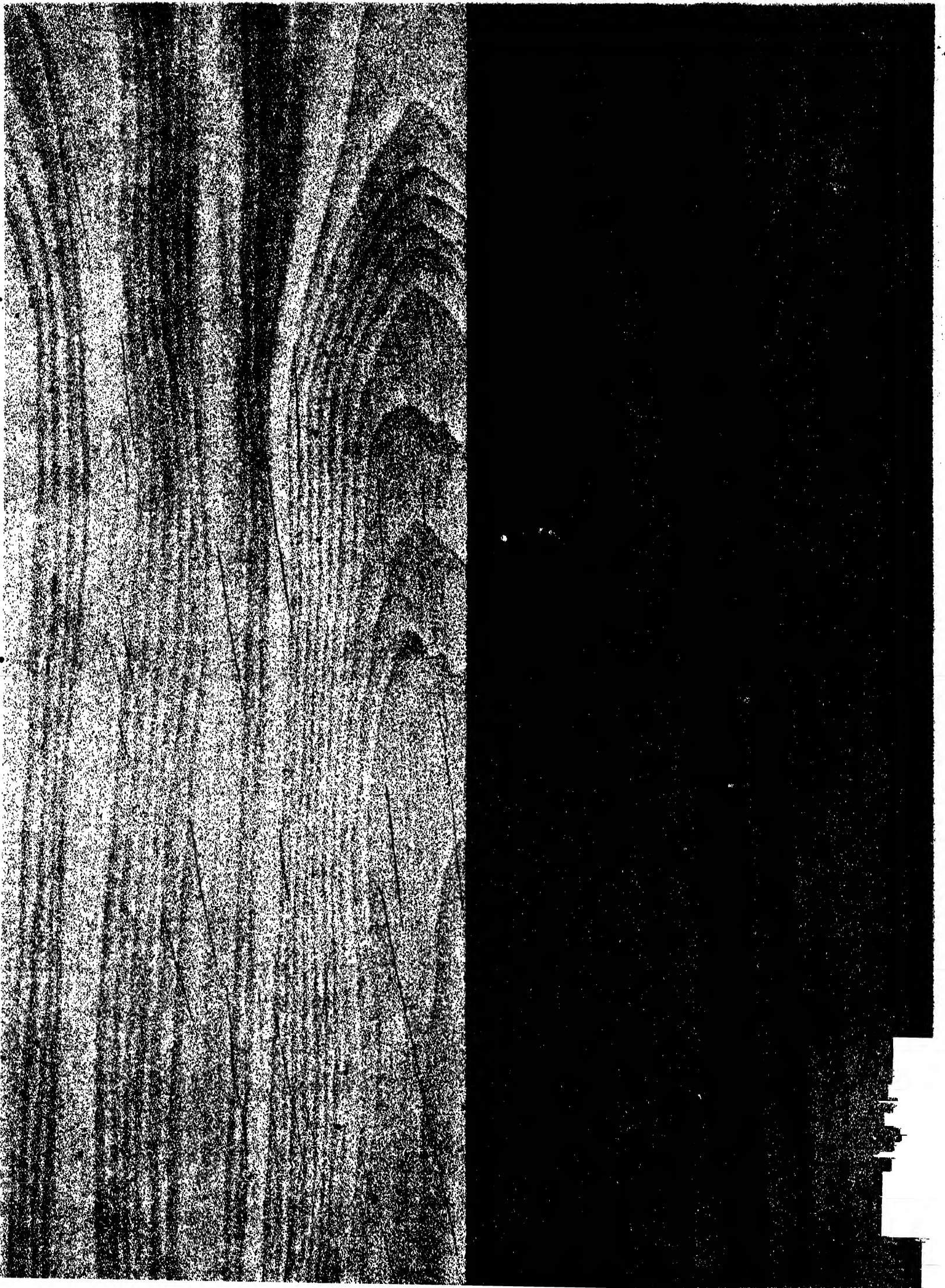


• concordant influences it is not surprising that a marked similarity should be apparent in the general outward forms of vegetation on the two hills, due to the frequent presence of the same characteristic plants on both. Everywhere at Mahableshwar, as at Matheran, we find the Myrtle tribe represented by endless woods of the beautiful Jambul tree (*Eugenia Jambulana*), the Melastomas by the Anjan or Ironwood (*Memecylon edule*), the Laurels by the Pisa (*Litsaea Stocksii*), and the Madder tribe by the thorny Gela (*Randia dumetorum*)—a small tree, generally a shrub, with numerous stiff branches, armed with spines, and large fragrant white flowers, which turn yellow before they fade. There is the same undergrowth of shrubs and herbaceous plants, the natural orders of *Leguminosae*, *Acanthaceae*, and *Compositae* being specially and numerously represented. There are many showy climbers, trailers, and creepers, and Orchids and Dendrobiums common to both hills, while everywhere the little silver fern covers with equal impartiality every sheltered bank and rock. Some years ago, before leaving India, I prepared for the "Bombay Natural History Society's Journal," with the aid of several competent botanists, a catalogue of the flora of Matheran and Mahableshwar. I cannot pretend that it is a complete list, for the simple reason\* that during the four rainy months of the year, when most herbaceous plants are at their best, the hills are practically inaccessible to Europeans; but in addition to the hill flora it includes some of the more conspicuous plants on the higher levels of the road from Poona to Mahableshwar; and the list of forest trees, which are conspicuous at all times, may perhaps be accepted as complete. It may interest you to know that of the 733 names included in the catalogue, about 125 are the names of trees or sub-trees, as distinguished from shrubs, creepers, grasses, ferns, and undergrowth generally. • Of the trees probably not more than ten species have been introduced, and about 115 species are probably indigenous. They constitute but a small proportion of the indigenous trees found throughout India, the number of which exceeds 2,000 species, but they give some idea of the diversity of forest vegetation in the limited area under consideration, if we bear in mind that the number of species of indigenous trees in Great Britain is only forty.\*

The trees which have been distinctly introduced are the Peach, which is cultivated at the hill station of Panchgani, near Mahableshwar; the Stringy Bark (*Eucalyptus obliqua*), which does not take kindly to Mahableshwar, the rainfall there being evidently too heavy for it, but does better at Panchgani—which, at a distance of only ten miles from Mahableshwar, has a much lower rainfall—though not nearly so well as on the Nilgiri Hills; the *Cinchona succirubra*, which again has not been a success, as on the Nilgiri Hills and elsewhere; the Cassowary tree or Beefwood (*Casuarina equisetifolia*), which has been extensively planted at Panchgani, but much prefers the lower lands nearer the sea, and especially the sandy beaches of the Konkan coast; the Oak (*Quercus robur*), of which, however, there are very few well-grown trees; and the Mulberry (*Morus alba*), which was probably brought from China.

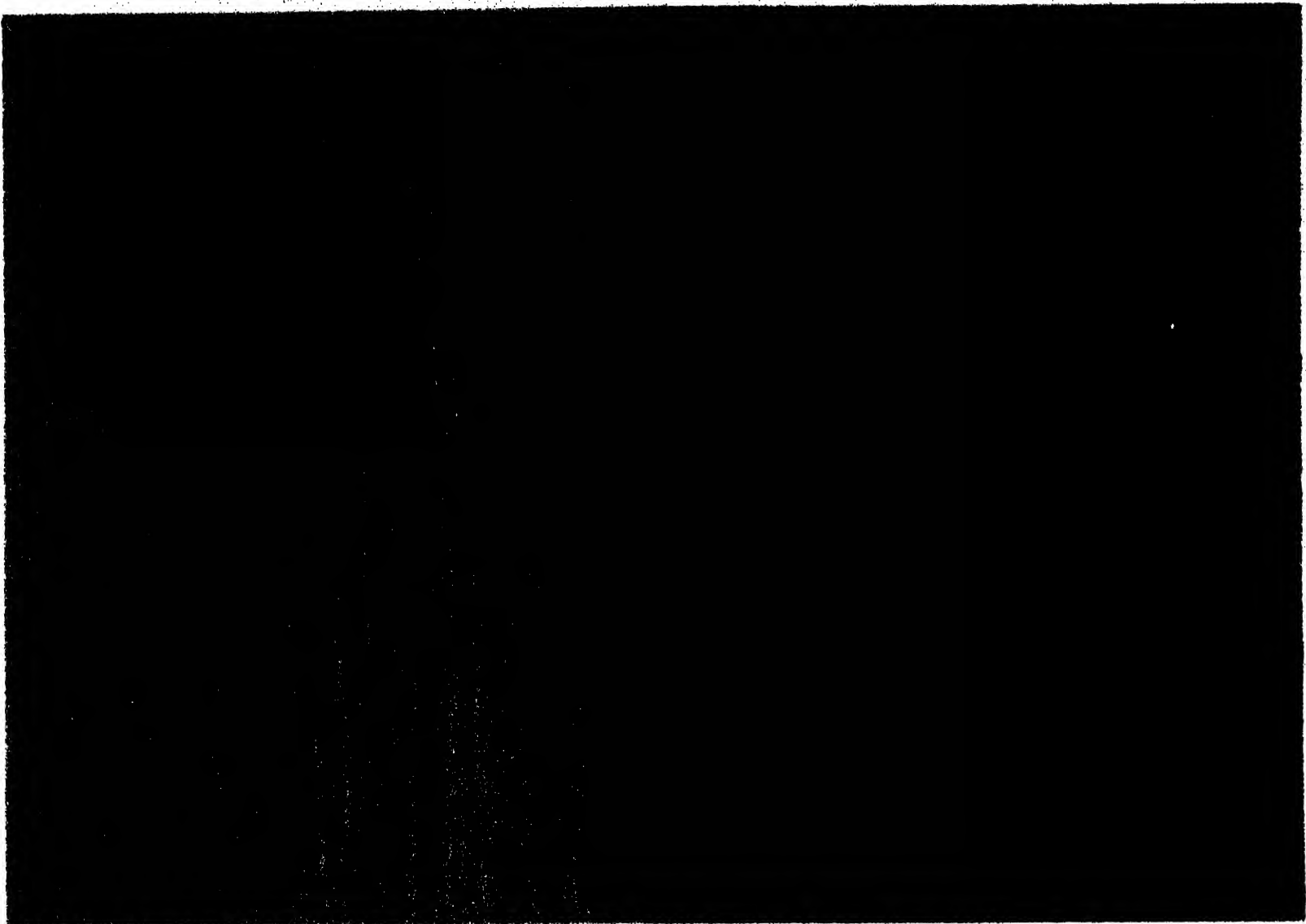
Among the more important or more conspicuous trees which may be regarded as indigenous are two species of *Garcinia*—the wild Mangosteen (*Garcinia indica*) and the Gamboje tree (*Garcinia malifolia*), and two species of *Sterculia*—the *Sterculia urens*, from the wood of which native guitars are made, and the Goldar (*Sterculia guttata*), conspicuous by its large, peach-shaped fruit, covered with scarlet down; the Silk-cotton tree (*Bombax malabaricum*), which attains a great size, and is a tree of strange beauty when in full bloom, with its large, showy, rose-red flowers; the Kāsu (*Elavocarpus oblongus*), with leaves turning red in autumn, and clusters of flowers with white-fringed petals and reddish-brown sepals; the Frankincense tree (*Boswellia serrata*), which is plentiful on the Ghāt road between Poona and Mahableshwar; and another balsamiferous tree, the *Canarium strictum*, yielding a gum, burnt as incense by the hill people at their religious services, and much sought after on account of the rarity of the tree, of which I have found only one specimen at Matheran, to my lasting wonder at its presence there, in a thick wood, far from its congeners, and hemmed in by countless aliens; the *Guruga pinnata* (belonging also to the same natural order *Burseraceae*), the bark of which is used in tanning; the Indian Sarin-wood (*Chloroxylon Swietenii*), an excellent wood for cabinet work of the better kind; the Indian Red-wood or Bastard Cedar (*Soyimida febrifuga*), the bitter bark of which is used as a substitute for cinchona bark; two species of the Jujube tree (*Zizyphus*); the Koshimb tree (*Schleichera trijuga*), on the young branches of which lac is produced in many parts of India; the well-known Mango tree (*Mangifera indica*), which is found wild on many hills, though sometimes said to have been introduced by the Portuguese monks from Brazil; the "Flame of the Forest" (*Butea frondosa*), which has given its name—"Falas" in the vernacular—to the memorable plain of Palasi, commonly known as Plassey; the Blackwood tree (*Dalbergia latifolia*), of which is made the elaborately-carved furniture, which at one time was much prized in Bombay; the beautiful Indian laburnum (*Cassia fistula*); the *Aracia Suma*, from the wood of which Catechu is manufactured; and yet another beautiful representative of the order *Leguminosae*, the Laeli (*Albizia stipulata*), a very conspicuous tree at Matheran, with clean stem and spreading branches, finely pinnate leaves, and large acacia-like flowers, with numerous white, lilac-tipped stamens; the Ain (*Terminalia tomentosa*), a valuable timber tree; the Myrobolam tree (*Terminalia Chebula*), which is found in great abundance on Mahableshwar, the fruit—the Chebulic Myrobolam of commerce—being largely exported, coming indeed, for the whole

\* Lieut.-Col. Bailey on "Forestry in India," *The Scottish Geographical Magazine* for 1897, p. 572.

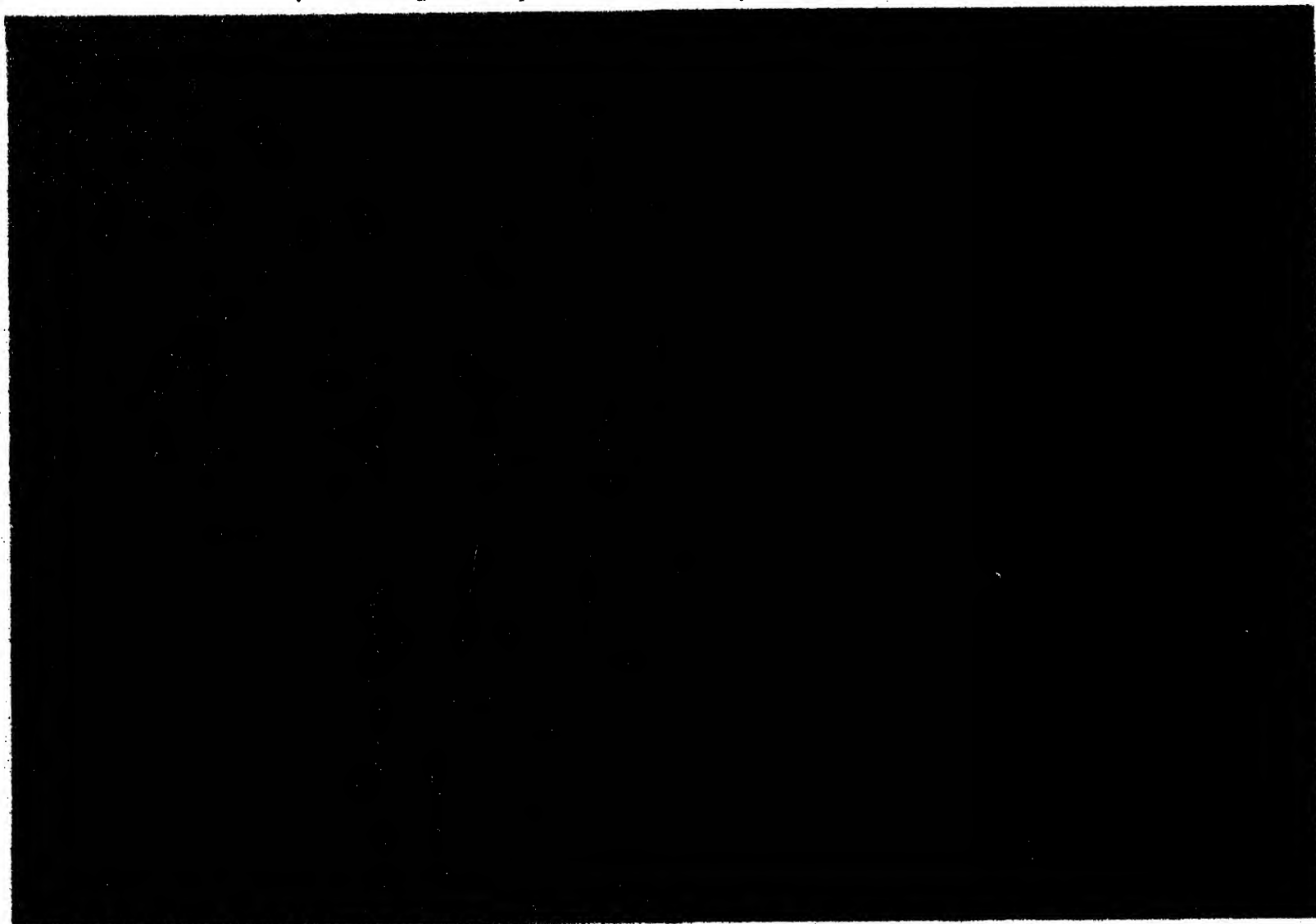


51.—*Chloroxylon Swietenia*. D.C. Satinwood or Hurugalu. A moderate-sized deciduous tree, found in Central and South India, also in Ceylon. Wood very hard, yellowish-brown, (the inner wood of a darker colour), with a beautiful satiny lustre. It is used for agricultural implements, cart building, furniture, picture frames, turning, and cabinet making; and is found to stand well under water. Weight, about 62 lbs. per cubic ft.



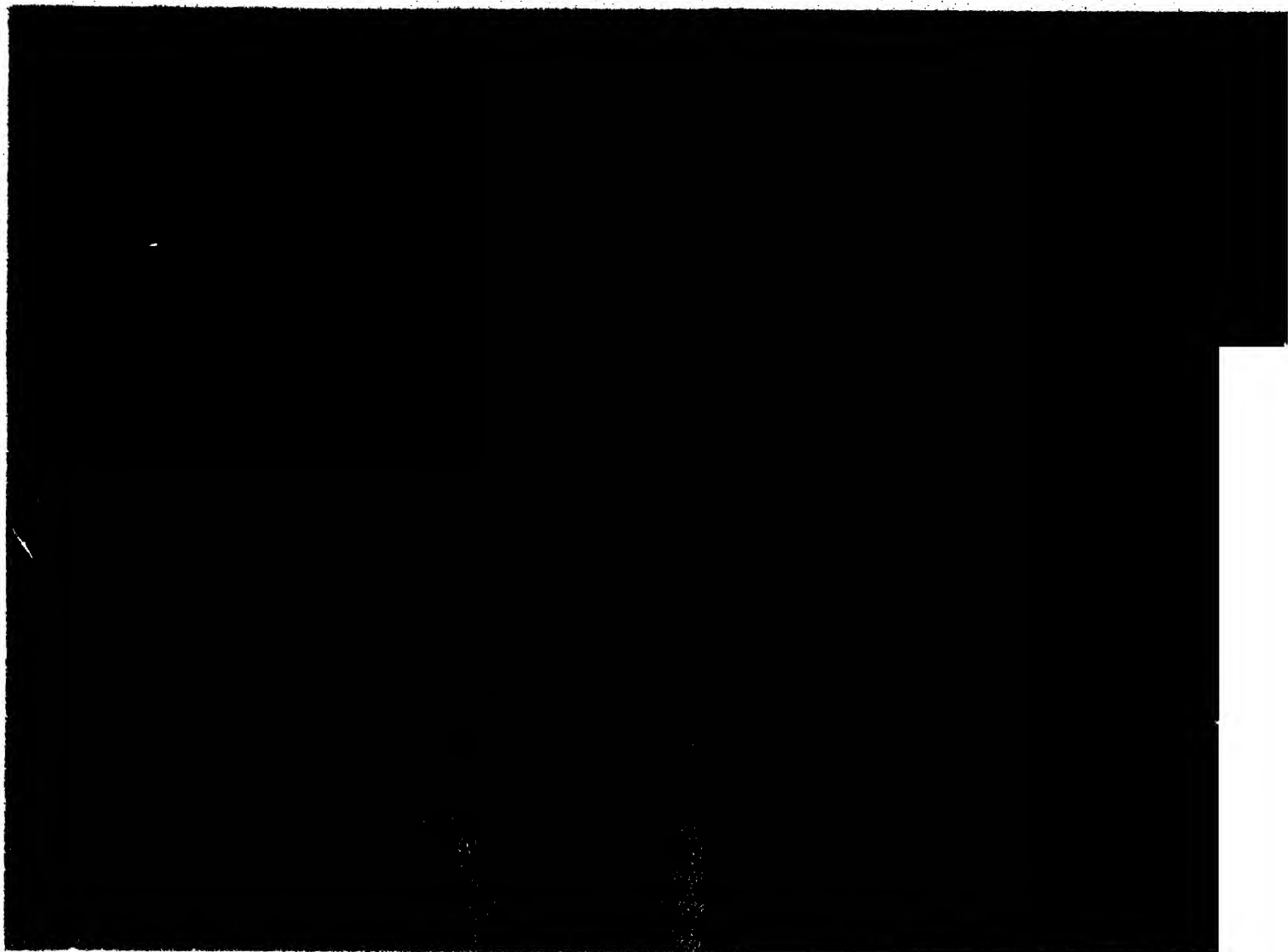


• 52.—*Schima Wallichii*. Makusal-Chilauni. A large evergreen tree. Wood red, or reddish-brown, moderately hard. Weight 44 lbs. per cub. ft. Used chiefly for building, also for canoes and ploughshares. GAMBLE.

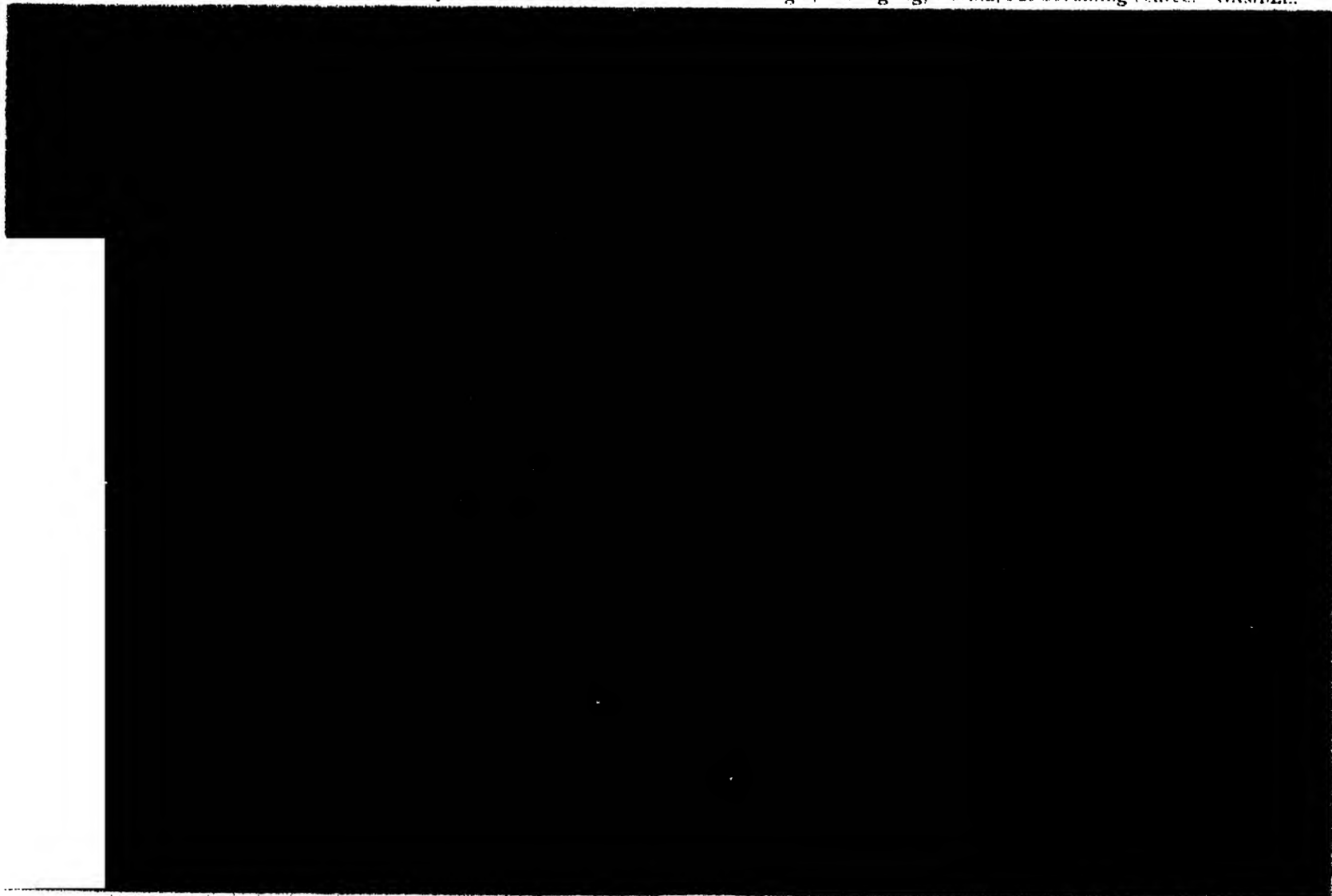


• 53.—*Lagerstræmia tomentosa*. Laieya. A large deciduous tree. Wood moderately hard. Used for bows, spear-handles, canoes and cart-wheels. GAMBLE.





• Used for ships, boats, building, carts; in Ceylon for casks. **54.**—*Lagerstræmia Flos-Reginæ*. Arjuna or Jarul. Large deciduous tree. Wood hard. Main timber of E. Bengal, Chittagong, Burma, but becoming scarce. GAMBLE.



**55.**—*Lagerstræmia lanceolata*. . Boda or Bentaek.  
(For description see plate 56.)



62.—*Pterocarpus Marsupium*, Roxb. (Honnê.) A large deciduous tree, common in Mysore and Shimoga forests. Wood very hard, close grained; tough and strong, heartwood yellowish brown with darker streaks. This wood is durable, seasons well, and takes a fine polish. It is much used for door and window frames, posts and beams, cart and boat building. From wounds in the bark it yields a red gum resin called "Kino," much used in medicine. The average weight is about 48 lbs. per cubic foot. [Mysore Catalogue.]





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## CONTENTS.

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of India, third on the list of exports of forest produce as regards valuation, and second as regards quantity; the Jambul tree (*Eugenia Jambolana*), already referred to, which may be regarded as the most characteristic tree of both Matheran and Mahabaleshwar, impressing, as it does most effectually, its grace of form and beauty of colour on all the landscape and shading the ground everywhere with a cool canopy of sweet-scented leaves; another tree, also of the Myrtle order (*Careya arborea*), which has been already referred to; the Ironwood (*Memecylon edule*), which has also been referred to and is also a characteristic tree of both hills, with its dark shining leaves like the leaves of the Camellia; the Benteak tree (*Lagerstroemia parviflora*), which yields a wood of excellent grain for the cabinet-maker; the Kanta Kumbal (*Sideroxylon tomentosum*), a tough, hard-grained tree, as its name implies; the *Bassia latifolia* or Mowrah tree, from which Mowrah liquor is made in other parts of India; and yet a third tree of the Sapodilla order, the Bokul (*Mimusops Elengi*), with dark green foliage and honey-scented flowers; the *Diospyros assimilis*, one of the Indian ebones; the Kaola (*Symplocos Beldamei*), with blossoms scented like the hawthorn and blue berries; the wild Olive (*Olea dioica*); the Wâras (*Heterophragma Roxburghii*), a tall tree of the Bignonia or Trumpet-Flower Order, with grey pinnate leaves and clusters of showy white bell-shaped flowers; the Teak tree (*Tectona grandis*), the most important of all the forest trees; the Shewan (*Gmelina arborea*), the pale yellow close-grained wood of which is used for planking, furniture, the panels of doors, etc.; the wild Nutmeg (*Myristica attenuata*); and fifteen species of the Laurel order, all notable and some of them very beautiful trees, the two most notable being the *Litsea Stocksii* already referred to, a shapely laurel rising to a height of twenty feet or more, and generally assuming a pyramidal tapering form, and displaying whorls of pale bluish leaves—a very characteristic tree of both hills—and a species of Cinnamon (*Cinnamomum Tamala*), of which I have found only four specimens, all at Matheran—a striking and handsome tree, though of no great size, with tufts, when first bursting into leaf, of small pink transparent leaves, which afterwards lengthen and become pointed at both ends, and have marked ribs or nerves, and are dark and shining above, and when dried turn to a rich brown and yield a spicy scent when crushed. These, with several species of trees of the Spurgewort order (*Euphorbiaceæ*), which is well represented on both hills, and includes the *Macaranga Roxburghii* already referred to, and readily recognised by its large ovate and peltate leaves, and the Hasâna (*Bridelia retusa*), a good timber tree; and of the genus *Ficus*, which includes the well-known Banyan tree, the sacred Pipal, the Sycamore tree of the Bible, and other Figs not so well known; the stately and fine-foliaged Jack tree (*Artocarpus integrifolia*), with its enormous fruit, allied to the Figs; the Willow (*Salix tetrasperma*), and the Fish tail palm (*Caryota urens*)—the only palm included in my catalogue—make up a fairly full list of the more conspicuous of the forest trees on the two hills.

I wish I could convey to you something more than a dim conception of the beauty and perennial charm of these Indian woods. But that is beyond my power. It will be enough for me, and I shall be quite satisfied, if, by my narrative, imperfect and meagre though it be, I shall have helped you in any degree to appreciate the value of the great work done by those who have preserved and improved the forest tracts of British India to the lasting benefit of the State and the people.

H. M. B.

In proposing a vote of thanks to the lecturer for his highly interesting and instructive paper, the Chairman (General Michael) said that, as Mr. Birdwood had paid him the compliment of alluding to him personally in connection with the early efforts of the Madras Government to introduce a workable system of forest conservancy into India, he might perhaps add a few words to what Mr. Birdwood had said. There are few men, he said, now left alive among the Indian services who knew or could remember—as he did—what the state of affairs was, as regards forests, half a century ago, when the Madras Government made the effort spoken of. In those days hundreds of acres of primeval forests used to be ruthlessly cut down and burned by the inhabitants for the sake of a few scanty crops of millet. Timber merchants used to be allowed to go into richly-wooded tracts and work their wicked will. No thought seemed to be taken of the hereafter, but in 1848 an experimental establishment was organised for the protection and the economical working of one of the most valuable tracts of forest in the far south of the Madras Presidency. Mr. Birdwood had stated that, after seven years of somewhat uphill work a pronounced success, both financial and preservative, was achieved, and the ball was thus set rolling. Success was the one thing needed to cause the Court of Directors of the East India Company to take the matter up warmly—conservancy measures and establishments spread rapidly all through India—and with what result? In 1848 the forests of India were fast being ruined by neglect and reckless waste, and the revenue was practically *nil*. By 1898 all existing forests were not only saved and put under good care, but he (the Chairman) was afraid to say how many thousands of acres or square miles had been planted or reafforested, and the net annual revenue stood at £1,000,000 sterling or more. By that time also most of our colonies and dependencies, and

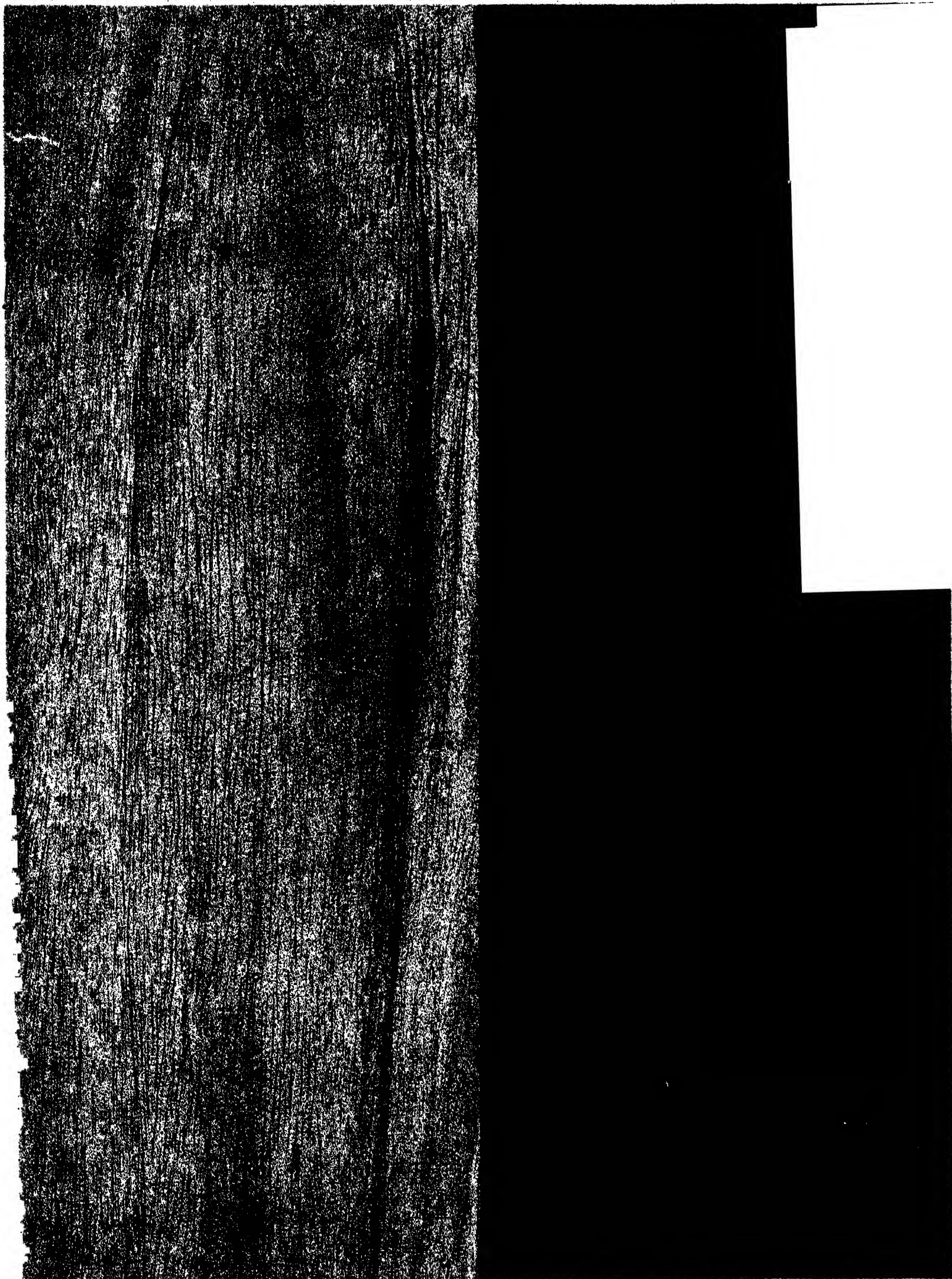
even the United States, had taken a leaf out of India's book, and had established forest conservancy departments. Of course, this gigantic success is due to the measure having reached Imperial proportions. Madras can only take credit for a share of it, but she is justly entitled to look back with satisfaction to her pioneering scheme having been started on a sound basis, and to its having thus proved a success. Too much stress cannot be laid on the value of two principles on which the work was begun—firstly, that full and liberal recognition and respect for the ancient communal rights of the people should always be maintained; and secondly, that, in carrying out forest conservancy, preservation of the natural resources should be the first consideration, and the acquisition of revenue a secondary one. The ancient rights of the people over forest land is a matter with which it is vitally necessary to deal in a liberal spirit. The early records of the India Office show that on this rock both Bombay and Tenasserim split when conservancy was first attempted there. This same rock has frequently cropped up since, as all forest officers know well—and a most dangerous one it is, because if once the local people think they have been badly or illiberally treated they have a thousand and one methods of showing hostility to the Department, and, maybe, to the Government itself. It was highly satisfactory to see that Lord Roberts, in the political part of his autobiography, took a clear-sighted view of this very question, and sounded a note of warning against undue over-riding of ancient forest rights, as a probable fertile source of discontent in India. He thanked Mr. Birdwood warmly on behalf of the meeting.

### DESCRIPTIONS OF PLATES 21, 28 and 33.

- 21.—*Eugenia jambolana*. Black Plum, Jaman. Evergreen. Wood reddish-grey, moderately hard, darker near centre. Weight 48 lbs. per cubic foot. Used for native building purposes, agricultural implements, rice-mortars, carts, and for well work, as it resists action of water. Gives a good fuel. One of the trees on which the tasar silkworm is fed. GAMBLE.
- 28.—*Diospyros Kurzii*. Andamanese Marble Wood. Evergreen. Wood hard, but liable to shrink and warp. Useful for cabinet work, sticks, frames and carriages. Should be of great value in European market, if known and supplied. GAMBLE.
- 33.—*Dipterocarpus Hasseltii*. (Andaman Gurjan) (= *D. turbinatus*.) The Gurjan Oil-tree. A lofty evergreen, 150 to 200 ft. high. Sapwood white, heartwood red-brown. Its wood-oil is largely collected and exported, and is also used for painting houses and ships. The timber is used for house-building, canoes and packing-cases, but is soon destroyed by white ants and therefore not much in estimation. GAMBLE.

### LIST OF TIMBERS ILLUSTRATED.

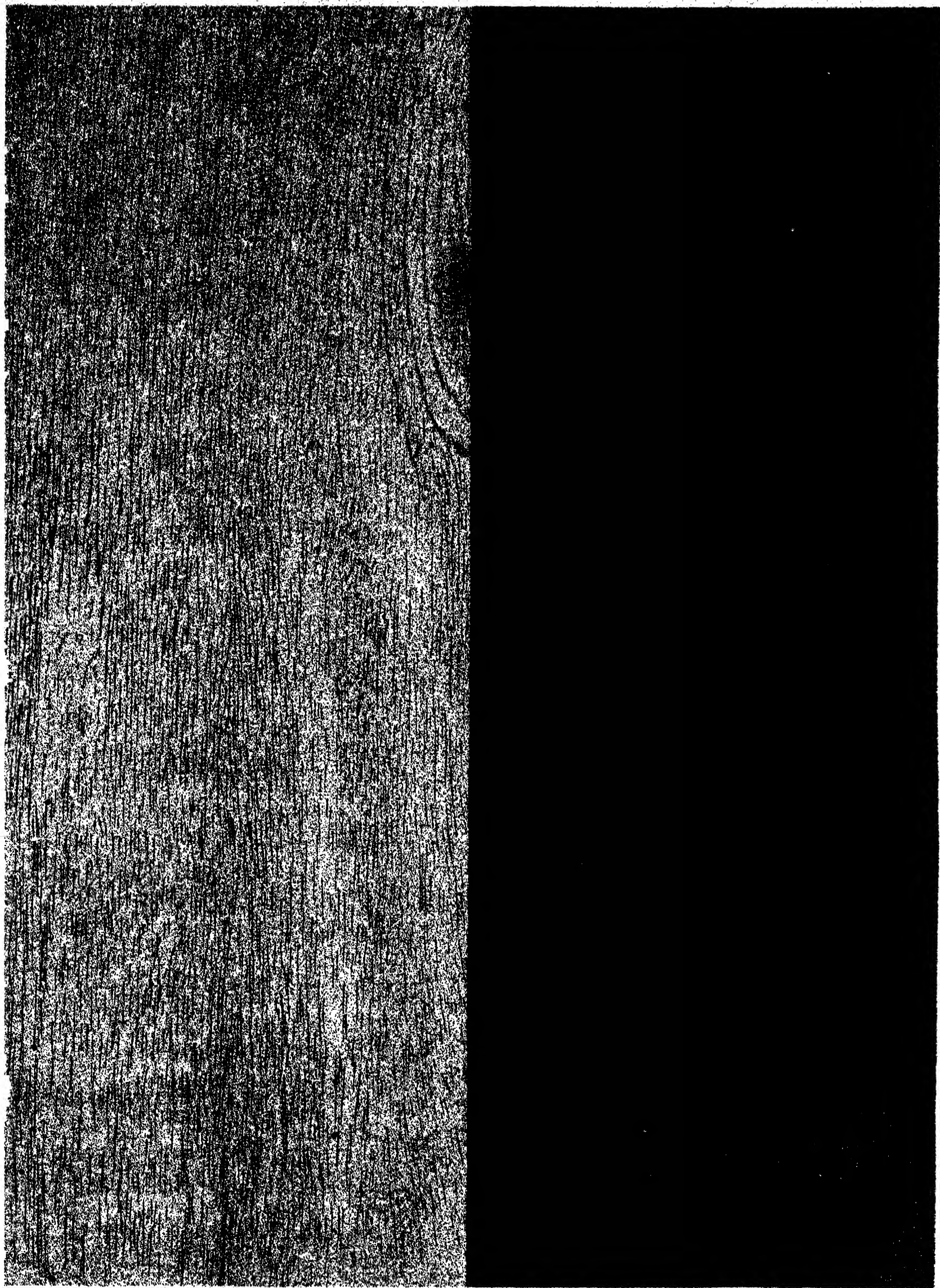
	Plate No.		Plate No.
<i>Adenanthera pavonina</i> ...	78	<i>Eugenia Jambolana</i> ...	21, 22
<i>Adina cordifolia</i> ...	70	<i>Gmelina arborea</i> ...	66, 67
<i>Aegle marmelos</i> ...	68	<i>Gurjan Oiltree</i> ...	33
<i>Albizzia lebbek</i> ...	45, 60, 61	<i>Hopea parviflora</i> ...	74
<i>procera</i> ...	59	<i>Ironwood of Pegu</i> ...	79
Andamanese Marble wood ...	28	<i>Jackwood</i> ...	25, 43, 44, 46
<i>Aquilaria agallocha</i> ...	34	<i>Juglans regia</i> ...	81
<i>Artocarpus chaplasha</i> ...	42	<i>Lagerstroemia Flos-Reginae</i> ...	54
<i>integrifolia</i> ...	25, 43, 44, 46	<i>hypoleuca</i> ...	58
<i>lakoocha</i> ...	48	<i>lanceolata</i> ...	55, 56, 57
Bel Fruit ...	68	<i>tomentosa</i> ...	54
<i>Berrya ammonilla</i> ...	77	<i>Mahogany-Toon</i> ...	64
<i>Bischofia javanica</i> ...	41	<i>Michelia champaca</i> ...	31, 72
Black Plum ...	21, 32	<i>Mimusops elengi</i> ...	75
Blackwood ...	24, 26, 27	<i>Mitragyna parvifolia</i> ...	69
Camphor wood ...	38	<i>Nepal Camphor wood</i> ...	38
<i>Careya arborea</i> ...	73	<i>Planchonia valida</i> ...	76
Cedar, Red ...	41	<i>Podocarpus neriifolia</i> ...	71
White ...	39, 40	<i>Pterocarpus dalbergioides</i> ...	66
<i>Cedrela Toona</i> ...	64	<i>Marsupium</i> ...	62, 63
<i>Cedrus libani</i> var. <i>Deodara</i> ...	36, 37	<i>Rosewood</i> ...	24, 26, 27
<i>Chloroxylon Swietenia</i> ...	51	<i>Sandal wood</i> ...	78
<i>Chikrassia tabularis</i> ...	80	<i>Satin wood</i> ...	51
Chittagong wood ...	80	<i>Schima Wallichii</i> ...	52
<i>Cinnamomum glanduliferum</i> ...	38	<i>Shorea assamica</i> ...	47
<i>Coromandel Ebony</i> ...	82	<i>talura</i> ...	49, 50
<i>Dalbergia latifolia</i> ...	24, 26, 27	Teak ...	15 to 20, 23
<i>Deodar</i> ...	36, 37	<i>Tectona grandis</i> ...	15 to 20, 23
<i>Diospyros ebenum</i> ...	83	<i>Terminalia belerica</i> ...	35
<i>Kurzii</i> ...	28	<i>tomentosa</i> ...	29, 30, 32
<i>melanoxylon</i> ...	82	<i>Trincomali wood</i> ...	77
<i>Dipterocarpus Hasseltii</i> ( <i>turbinatus</i> ) ...	33	Walnut ...	81
<i>Dysoxylum malabaricum</i> ...	39, 40	<i>Xylia dolabriformis</i> ...	79
Ebony ...	83		



66.—*Gmelina arborea*, Linn. Kullé or Sivané. A deciduous tree found throughout India, Burma and the Andaman Islands. Wood glossy, close and even-grained, soft, light and strong, durable, does not shrink, warp or crack. Weight 30 to 40 lbs. per cubic foot. Easily worked, readily takes paint or varnish; very durable under water. Highly esteemed for planking, furniture, domestic utensils, door panels, carriages and palanquins, well-work, boats, toys, packing-cases, picture-frames, organ pipes, sounding-boards and other such work where shrinkage is to be avoided. Used in Burma for carving images, clogs and canoes. It would probably be a valuable wood for tea-boxes. F. B. MANSON.







67.—*Gmelina arborea*, Linn.

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# The Journal of Indian Art and Industry.

## TILE-MOSAICS OF THE LAHORE FORT.

By J. PH. VOGEL, PH. D.

\*SUPERINTENDENT, ARCHÆOLOGICAL SURVEY, NORTHERN CIRCLE.

*"But the sight of wonder is, when travelling over the plains of Persia or India, suddenly to come upon an encaustic tiled mosque. It is coloured all over in yellow, green, blue, and other hues, and as a distant view of it is caught at sunrise, its stately domes and glittering minarets seem made of the purest gold, like glass, enamelled in azure and green, a fairy-like apparition of inexpressible grace and the most enchanting splendor."*

(SIR GEORGE BIRDWOOD, *Industrial Arts of India*, Vol. II, p. 306).

### I. INDIAN TILEWORK.

The seventy-six plates of coloured drawings, which will be preliminarily published in five consecutive issues of this Journal, are intended for final publication as a volume of the Archaeological Survey of India. The one hundred and sixteen panels of tile-mosaics reproduced in these plates are found on the west and north walls of the Lahore Fort which contains the palace buildings of the Great Moghuls Jehangir and Shah Jehan and consequently dates from the first half of the 17th century of our era.

This kind of wall decoration is unequalled for its variety of design and magnificence of colour. Introduced from Persia, it was largely resorted to for the brick buildings in the plains of Northern India, especially in the Punjab, the most famous specimens being found at Lahore, the capital of that province.

To the sober taste of the Westerner this mode of decoration may appear too gay and gaudy to suit the nature of a building intended for religious worship or for a last resting-place of the dead. But certainly no decorative art could be devised more truly oriental in the dazzling brilliancy of its bright colours, more bright and brilliant in the splendour of an eastern sun.

The best known example in Lahore is the Mosque of Wazir Khan which has formed the subject of two well-illustrated papers in this Journal.\* This building situated in the heart of the ancient, brick-built city has preserved on its façade and minarets the full glory of its gorgeous tile decoration.

The Chini ka Rauza† at Agra is also familiar to travellers in Hindustan and lovers of oriental art. Other less celebrated specimens at Lahore are the Mosque of Dai Anga, ‡ the wetnurse of the Emperor Shah Jehan; the gateway (known as Chauburji) of the Garden of Zebinda Begum, the talented daughter of Aurangzeb; that of the Gulabi Bagh or Rosewater Garden laid out by order of Mirza Sultan Beg; and the gateway (known as Chintgarh) belonging to the Tomb of Ali Mardan Khan, the great engineer and governor of Lahore. These buildings were all constructed between 1630 and 1660 and consequently belong to the reign of Shah Jehan, the most magnificent of the Great Moghuls.

The imperial palace of Lahore outshines all these buildings by the truly princely magnitude of its colour decoration. A wall nearly 500 yards in length and 16 yards in height—in other words a surface of more than 8,000 square yards—has been adorned with panels of tile-mosaics. What lends this work an uncommon interest, is the circumstance that here not only geometrical or foliated designs have been used, but in defiance of the tenets of the Moslim creed a great number of these panels exhibit figures of living beings. Many of the scenes, illustrating the court life and pastimes of the Moghul sovereigns, possess considerable historical interest. Several relate to elephant fights, which were one of the favourite recreations of the Moghul Court; and one of the finest panels shows four horsemen playing the noble game of *changan* or Persian polo.

All such panels as exhibit man or beast have been selected for reproduction,§ except those which are too much damaged to be recognisable and some which are merely duplicates executed in a different scheme of colour. The work of reproducing these one hundred and sixteen panels has involved considerable labour. It was started in the beginning of 1902; and in April of the same year my draftsmen had prepared tracings of all panels selected for publication, the exact colour of each separate tile being marked on the tracing. The height of the wall and the position of some of the panels, which had to be reached with bamboo ladders tied together, made their task not only difficult, but decidedly perilous.

\* J. L. Kipling, *The Mosque of Wazir Khan*, Lahore, J.L.A. No. 19. (July 1887) and Andrews (July 1903).

† E. W. Smith, *Moghul colour decoration of Agra*, Part I, Allahabad, 1901. ‡ *Archæological Survey of India, Annual Report for 1904-5* pp. 20f, plate IV

§ Only one of the plates represents a Spandrel of floral design.



The work of preparing drawings on a reduced scale from the tracings was accomplished in my office, but not without comparing each finished drawing with its original on the Fort wall. It took no less than five years to bring the work to an end, as only part of the summer months could be devoted to it, the cold season being taken up by inspection tours and excavation. The copying and colouring were entirely done by my Head draftsman Munshi Ghulam Muhammad, who has been attached to the Archaeological Survey for twenty-four years. The excellence of his work does great credit to the Mayo School of Art at Lahore where he received his first training in the days when Mr. Lockwood Kipling was Principal of that institution. It will be doubly appreciated by those who have experienced the scorching heat of a Lahore summer, which makes life intolerable and labour bathsome even to natives of the country.

The art of tile decoration, of which the Lahore palace affords so striking an example did not originate in India. It is true that traces of such work have been found in the course of excavation of a few buildings of the pre-Muhammadan period, notably among the ruins of the famous pagoda of Kanishka at Peshawar. But in this peculiar instance there is every reason to suspect foreign influence. It was apparently not until the Muhammadan period that tile decoration came into use in India and almost exclusively on buildings raised by the followers of Islam.\* On the monuments of the earlier or Pathan period it is but sparingly found. Under the rule of the Moghuls, on the contrary, it became one of the most favourite modes of architectural decoration. The finest example of the earlier period is the tomb of Rukn-ud-Din or Rukn-i-Alam, the glory of Multan. The saint after whom it is named lived in the reign of Ghiyas-ud-Din (A.D. 1320-24), the first king of the Tuglaq dynasty of Delhi and in that of his son Muhammad Shah (A.D. 1324-51).

"The Rukn-i-Alam," Cunningham † says, "is built entirely of red brick, bonded with beams of *sissu* wood which are now much decayed. The whole of the exterior is elaborately ornamented with glazed tile panels and string courses and battlements. The only colours used are dark blue, azure, and white, but these are contrasted with the deep red of the finely polished bricks, and the result is both effective and pleasing. These mosaics are not, like those of later days, mere plain surfaces, but the patterns are raised from half an inch to two inches above the background. This mode of construction must have been very troublesome, but its increased effect is undeniable, as it unites all the beauty of colour with the light and shade of a raised pattern."

Similar tile decoration is found on the tombs of the Nahars "the Wolves," an Afghan dynasty which ruled at Sitpur in the Muzaffargarh district of the Western Punjab, apparently at the time of the Lodi kings of Delhi (15th century). In addition to the colours enumerated by General Cunningham, we find yellow tiles used in the Sitpur buildings.

It is from about 1500, the commencement of the Moghul period, that tilework appears on the monuments of Delhi. One of the earliest examples is the tomb of Sikandar Lodi at Khairpur. It must date from about A.D. 1517, the year in which that king died. The arches inside the tomb are embellished with bands of tilework in foliated and geometrical designs and the spandrels contain rosettes in which blue tiles have been introduced. The entrance gate and the two kiosks in front show traces of square blue tiles; but here nearly all colour has gone.

Somewhat later in date are the tomb of Khawaja Khizr (A.D. 1524) at Sonapat, the battlements of which retain remnants of deep blue tile decoration, and that of Maulana Jamali, known as Jamali-Kamali, not far from the Qutb at old Delhi. The latter tomb is one of the most pleasing examples of early tilework found in the vicinity of Delhi. On the outside, a border of blue-and-white rectangular tiles of the Multan type runs in a single row between the sandstone brackets which support the eaves. The parapet has remnants of a foliated border, the cornice a narrow band of glazed blue bricks, and the battlements square blue tiles cut so as to fit between the projecting merlons. Round the doorway also there are traces of tile decoration in deep and light blue and green. The interior of the tomb has a dado of tile-mosaic in a geometrical star pattern of deep and light blue, green and yellow. The upper portion of the wall and the ceiling are decorated with carved plaster, partly inlaid with blue and yellow tile.

The tomb just described is an interesting transition from the early tile work of the Pathan period to the more elaborate ornamentation of the reign of Akbar (A.D. 1556-1605). Some noticeable examples of the latter type are found in the vicinity of "the Old Fort" or Purana Qila which was the Delhi of the early Moghul emperors. Opposite the western gate of "the Old Fort" stands the Khair-ul-manazil, a ruined mosque (A.D. 1562), which still retains some bits of brilliant tile mosaics of geometrical design in the spandrels over the central arch and also round the three prayer niches or *mihrahs* with medallions containing the sacred *kalimah*.† Other examples in the same neighbourhood are the ruined tomb known as Nili Chhattri, "the blue Pavilion," the entire outer surface of which appears once to have been decorated with geometrical and floral mosaics including inscriptions; and the

\* I know of only one example of a Hindu building decorated with tiles—a small Siya temple known as Nili Chhattri—outside the Salimgarh Fort at Delhi, but evidently these tiles are the spoils of some earlier Muhammadan edifice.

† *Archl. Survey Report*, Vol. V. p. 132; plate XXXIX.

‡ *Archl. Survey Annual Report for 1903-04* p. 25, plate XI.

Nila Gumbaz "the blue Dome," now used as a Police Station, near the village of Nizam-ud-Din Auliya. The latter building should perhaps be assigned a somewhat later date on account of its high-necked dome. Among the wonderful collection of historic tombs grouped round the Dargah of the Auliya Saint, one of the most attractive is that of Akbar's foster-father Shams-ud-Din Atgah Khan, surnamed Azam Khan.\* This building is adorned with faïence mosaics in which deep blue and green tiles are combined with white marble in geometrical patterns-- a mode of decoration not found anywhere else. The building must date from A.D. 1567.

The tile mosaics of Akbar's reign exhibit a scheme of five colours--deep and light blue, green, yellow and white; the designs are essentially geometrical.

The tile-work of Lahore represents again a later stage in the development of this mode of building decoration. It belongs to the 17th century and more especially to the reign of Shah Jehan (A.D. 1628-58) the period when Moghul art reached its greatest magnificence. At Lahore I know of only one example of the 16th century, namely the tomb of Shaikh Musa Ahangar, or "Moses the Blacksmith" which with its brilliant blue dome greets travellers on their first arrival in the capital of the Punjab. The flat dome is faced with small glazed bricks, the drum with square blue-and-white tiles and the body of the building with a frieze of tiles of the same shape and colour. Shaikh Musa, the patron-saint of the Lahore blacksmiths, died in the beginning of Akbar's reign and his tomb is said to have been built by that Emperor's mother.†

The Lahore tile-work of Shah Jehan's reign is of a much richer and more elaborate kind. In most cases the entire façade of the building is decorated with faïence-mosaics arranged in rectangular and square sunk panels. Sometimes the surface remaining between those panels is covered with a layer of red-coloured plaster, in which by means of white lines the effect of brick and mortar is produced. This is, for instance, the case with portions of the Mosque of Wazir Khan in Lahore City. The tiled panels display geometrical or more commonly foliated and floral patterns, enclosed within simple geometrical or scrolled borders. Very often the design consists of a flowering plant, a vase filled with flowers or a dish of melons and other fruit. It will be noticed beneath that these vases occur also on tile-clad buildings in Persia, but are ultimately derived from China. According to Mr. Edmund Smith‡ they are seldom or never found on Indian edifices prior to the time of Jehangir's reign. The flowers represented are in most cases hard to identify owing to their shapes being conventionalized and their natural hue adapted to the restricted scheme of five or six colours. Some panels contain inscriptions, either texts from the Quran in Arabic or foundation-poems in elegant Persian. The general character of the designs is closely related to that used in the fresco painting of the period, but the latter mode of decoration admitted of greater freedom and naturalism. This will be evident by comparing the tile-mosaics of Wazir Khan with the fresco painting inside that mosque.

The spandrels over the arches usually display graceful designs of flowers and foliage intertwined with scroll-work; and along the battlements runs a border of the well-known *kangurah* or crenelated pattern. The domes of mosques and tombs are usually faced with tiles of a uniform colour, but in a few cases, such as the tomb of Dai Anga, the wet-nurse of Shah Jehan, two colours are used. The mosque founded by the same lady, locally known as the Railway Mosque, is the only instance at Lahore known to me, in which tile-work is employed to decorate the interior of a building. This edifice which for several years was utilised as a Traffic Superintendent's Office, has recently been restored to its pristine destination.

It would be tedious to enumerate all the buildings of Lahore which are decorated with tile-work. The most noticeable have already been mentioned in the course of this paper. It should, however, be remarked that, although this tile decoration of Shah Jehan's reign is nowhere better represented than in the capital of the Punjab, some isolated examples are met with in other places of Northern India. In the same province we have the Shahi Masjid belonging to the Tomb of Shah Burhan at Chiniot in the Jhang district and the Dakhnai Sarai in the Jalandhar district, built by Ali Mardan Khan about A.D. 1640.

The Chiniwali Masjid at Thanesar in the Ambala district has its minarets and eastern façade covered with floral tile-mosaics. According to Rodgers,§ the date of the building is A.H. 973 or A.D. 1565-6.

Sadhaura, a small town in the Ambala district possesses the Mosque of Abdul Wahab, built in A.D. 1669, in the reign of Aurangzeb, the whole façade of which was once covered with tile-mosaics in floral patterns alternating with texts from the Quran.

That the art of tile-decoration penetrated also in the Province of Agra is proved by a few monuments. In the very heart of the sacred Hindu city of Mathura (*vulgo* Muttra) there rises the Jami Masjid founded by Abdun-

\* *Arch. Survey Annual Report* for 1903-04 pp. 24, plate XI.

† Thornton, Lahore pp. 145, 148 and 161 calls this tomb Pathan and states that it was built in Akbar's reign. Latif, Lahore, pp. 204 and 393 asserts that Shaikh Musa died in A.H. 925 (A.D. 1519) and that his tomb was built in the time of Ibrahim Lodi, but quotes the *Ain-i-Akbari* where it is said that he died in the beginning of Akbar's reign. The latter statement is correct. Cf. *Tabaqat-i-Akbari* (Lucknow 1875) p. 394.

‡ *Moghul Colour Decoration of Agra*, p. 14.

§ Revised list of objects of archaeological interest in the Punjab, Lahore, pp. 49-50.



Nabi Khan, who was governor of Mathura from 1660 to 1668 under Aurangzeb. The date of its foundation (A.H. 1071 or A.D. 1660-1) is contained in a chronogram. "The building," Mr. Growse\* writes, "is of considerable size and has four very lofty minarets, which with other parts of the fabric were once veneered with bright coloured plaster mosaics; but only a few panels now remain, and the whole of the mosque is rapidly becoming a ruin." It is interesting to note that Abdun-Nabi, the founder of this mosque, at the time of his being appointed to Mathura, was governor of Sirhind in the Punjab.

A much finer and more famous example of tile decoration is presented by the Chini ka Rauza, "the China Tomb," which rises on the left bank of the Jamna and is not the least of the Moghul buildings of Agra. It has been fully described and illustrated by Mr. Edmund Smith in one of his able volumes.† There is no inscription to tell the date of its erection, but tradition holds that it contains the remains of Afzal Khan, a poet, who died at Lahore in A.D. 1639. If this tradition is correct, we may here also suspect the influence from the Punjab, the home of Indian tile decoration. Mr. Smith, however, is of opinion that the Chini ka Rauza was not built until the reign of Aurangzeb, but does not substantiate his view by any arguments.

Agra, or rather the neighbouring village of Sikandrah, possesses earlier specimens of tile decoration in the kiosks of Akbar's mausoleum and in the Kapch Mahall, said to have been built by the Emperor Jehangir for his queen, Jodh Bai. But in both cases the tile-work is of the earlier and plainer type found in buildings near Delhi.

I have remarked above that the art of tile-work was introduced into India from Persia, where it formed the chief decoration of brick buildings for many centuries.‡ Here also a great variety of style is noticeable in buildings of different periods. In general, it may be said that in the earlier examples geometrical designs are used and the prevalent colour is blue. This is, for instance, the case with the famous Blue Mosque of Tabriz built by Jehan Shah (1437-68) and with the Masjid-i-maidan at Kashan of the 13th or 14th century. I may note here that the Persian term *kashi* by which tile-work and faience in general is indicated, not only in Persia but also in Northern India, is derived from the name of the last mentioned town, Kashan in Irak.

It is interesting that in the earliest Indian tile-work, that of Multan, also the colours are blue and white and the patterns exclusively geometrical.

Another famous example of early tile-work is the Gor-i-Amir, "the Grave of the Chief," i.e. the Mausoleum of the Great Timur built in his capital Samarkand in A.D. 1370. It was constructed by Persian artisans and under an architect, Muhammad ibn Mahmud of Isfahan, who is mentioned by name in one of the inscriptions on the edifice. The high drum and melon-shaped dome are clad with glazed bricks of dark blue, light blue and white. The courtyard is decorated with faience mosaics of a different style, similar to those found on Persian monuments of the beginning of the 15th century and probably executed about that time.

The tile-work of Delhi and Lahore is evidently derived from a later type of Persian faience, namely that which was in vogue in the 16th and 17th century under the great rulers of the Safavi dynasty (A.D. 1502-1736) who were contemporaneous with the Great Moghuls of India. As early as the 15th century examples of this style of *kashi* work occur on Persian buildings. Sarre reproduces a piece of faience mosaic which he acquired at Teheran, but which was said to originate from the famous Mosque of Imam Riza at Meshed (Mashad). This specimen is similar in design to Lahore tilework and has the same scheme of colour including crimson. The mosque of Meshed is said to be contemporaneous with the Blue Mosque of Tabriz, but some portions were added by the rulers of the Safavin house.

The Persian section of the Musée du Louvre contains a "plaque de faience de revêtement" originating from a mosque at Tauris of the 15th century. This specimen also exhibits exactly the same style as the *kashi* work of Lahore. It contains a fragmentary Arabic inscription in white letters interlaced with yellow flowers and stalks of turquoise blue on a dark-blue background. It is interesting to note the difference between this piece of Persian tile-mosaic and the earlier work of the 14th century—the large lustre tiles with letters and ornaments in relief, turquoise blue on a ground of white-and-gold.

A building of exceptional interest in the history of Persian tile decoration is the Mausoleum of Shaikh Safi-ud-Din at Ardebil in Azerbaijan, half-way between the Caspian Sea and the volcano Sawalan Dagh. Shaikh Safi, the progenitor of the Safavin house lived in the first half of the 14th century. The mausoleum built by his son contains not only the Saint's grave, but also those of Ismail the first Safavi king and his three successors. From Abbas the Great (1587-1629) the Persian kings were buried at Kum, but still regarded the Mausoleum of Ardebil as their national sanctuary. The tile-work was commenced in the 16th century and completed under Abbas II. (1642-1667), and therefore coincides with the great period of this decorative art in India.

\* Mathura 2nd. ed. 1880, pp. 140ff, and Blochmann, *Proc. As. Soc. Bengal*, for 1872, p. 12.

† *Moghul Colour Decoration of Agra*, Part I, Allahabad.

‡ The following observations regarding Persian tile-work are largely derived from Friedrich Sarre's monumental work: *Die islamische Persische Kunst*, Berlin, 1901.

The tomb of the Saint itself—a tower-like building circular in plan and surmounted with a flat dome—is faced with red and blue glazed bricks. This mode of decoration is quite different from that of the Moghul period but seems related to that of the Rukn-i-Alam of Multan. The decoration of the prayer room also differs from Indo-Moghul work, both as regards design and colour. Black and dark green, not found in India, are prominent.

The entrance gateway, however, which was built in the reign of Abbas II. and completed in A.D. 1647-48, as recorded by an inscription in tile-work, is profusely decorated with faience mosaics closely related to those found on the monuments of Hindustan. "The spandrels contain light-coloured flower stalks interlaced with arabesques on a dark ground. The inscription which consists of white letters interlaced with slim spiral tendrils on a dark-blue ground is surmounted by a frieze of rectangular panels with a stalactite decoration above. In these panels the arabesque disappears almost completely, and in their stead we find the flower-stalk mostly issuing from a vase and filling the arched area of the panel. These rounded vases are likewise conventionalized and have a foot in the shape of a pointed leaf resembling a Persian palmette. These are derived from Chinese examples and are found in Persian art from the middle of the 16th century, also on carpets of the period—the so-called vase-carpet." (Sarre). We have noticed above that such flower-vases form a common feature on the tile mosaics of Lahore. Sarre remarks that Chinese influence makes itself felt in Persian art from the 16th century onward—in ceramic art, in carpets and in miniature painting.

It is not a little curious that on the same gate of the mosque of Ardebil we find a panel in which the Chinese vase is placed between two peacocks—a device which, as Sarre observes, is very frequent in Byzantine art. I may add that it is also very common in Hindu sculptures of the Western Himalaya, especially on the carved fountain-stones of Chamba State, but—strange to say—in Indian tile-work it does not occur.

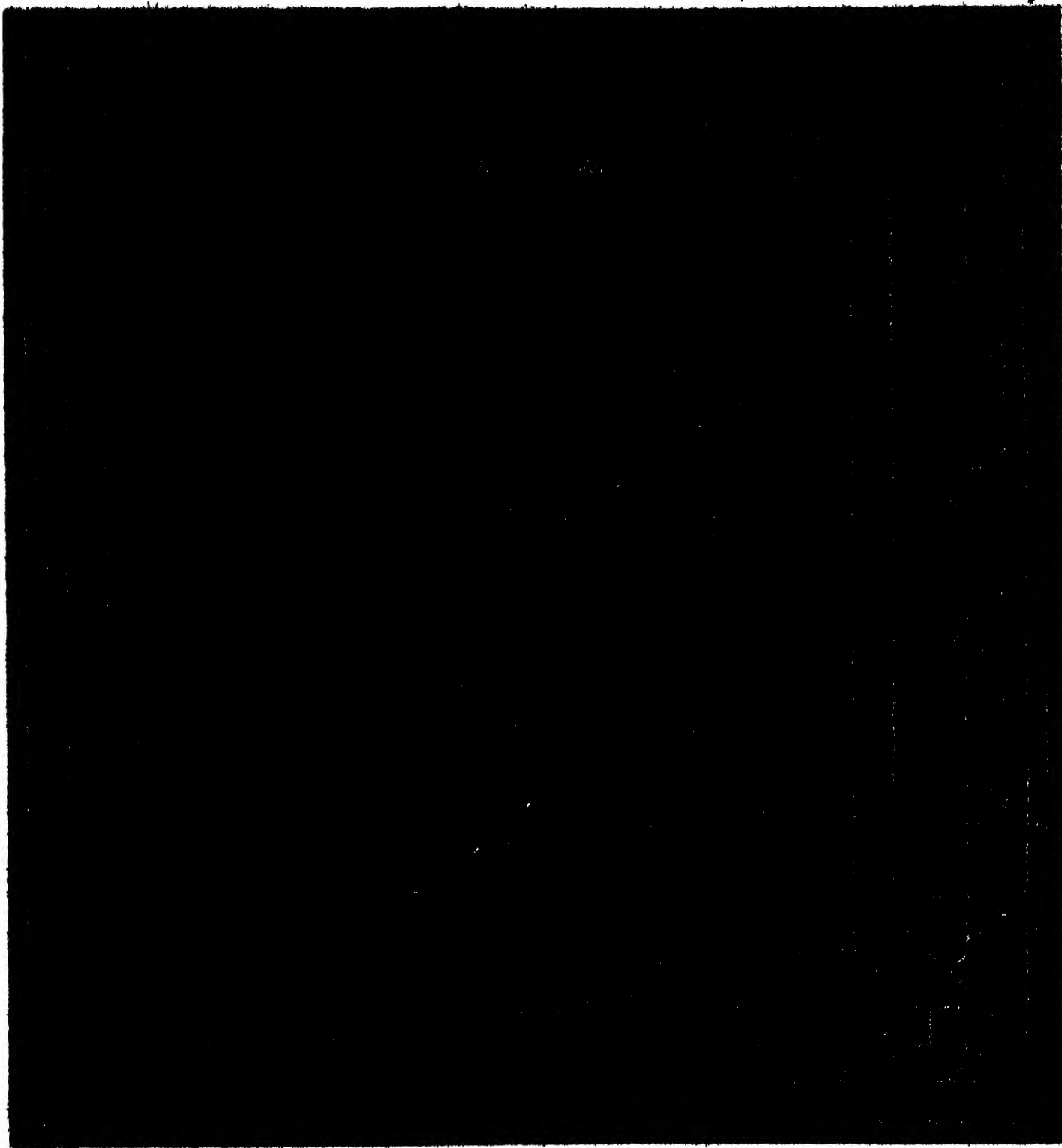
An inscription on the gate of Shaikh Safi's mausoleum mentions the name of Juh ibn Isfahani as the architect of the building. At Isfahan, the capital of the Safavin kings, we find several more examples of that faience decoration which rose to such prominence during their reign. The mosque of Shaikh Lutf-ullah, situated on the east side of the famous Maidan, was built under Shah Abbas in the beginning of the 17th century. The entrance gate resembles that of the Mausoleum of Ardebil, but is only partly decorated with real mosaics. "Only the upper portion of the niche" Sarre remarks, "with the stalactite vault and the inscription band shines in the brilliant colour of the faience mosaics, contrasting strongly with the faint colours of the [square] tiles beneath which were first glazed and subsequently painted."

In the Madrasah Madar-i-Shah or "College of the Queen-Mother" situated on the east side of the Chahar Bagh at Isfahan we find also mostly square tiles side by side with faience mosaics. It was built in A.D. 1710 by Shah Husain in memory of his mother, and consequently is one of the latest examples of decorative tile-work found in Persia.

The growing use of square tiles during the 17th century was evidently due to the greater facility of this procédé compared with the laborious, but much more effective art of tile-mosaic, in which each piece had to be cut to its proper shape. The change, therefore, marks a decided degeneration, though an attempt was made to imitate in the square tiles the designs of the old mosaics.

It is noteworthy that in the latest examples of Indian tile-work also we find the faience mosaics replaced by square tiles. This is, for instance, the case with the mosque of Begampura near Lahore which was built by Zakariyya Khan, surnamed Khan Bahadur, the Governor of the Punjab under Muhammad Shah. It seems, therefore, that throughout its history the Indian art of tile decoration has closely followed the examples furnished by Iran.

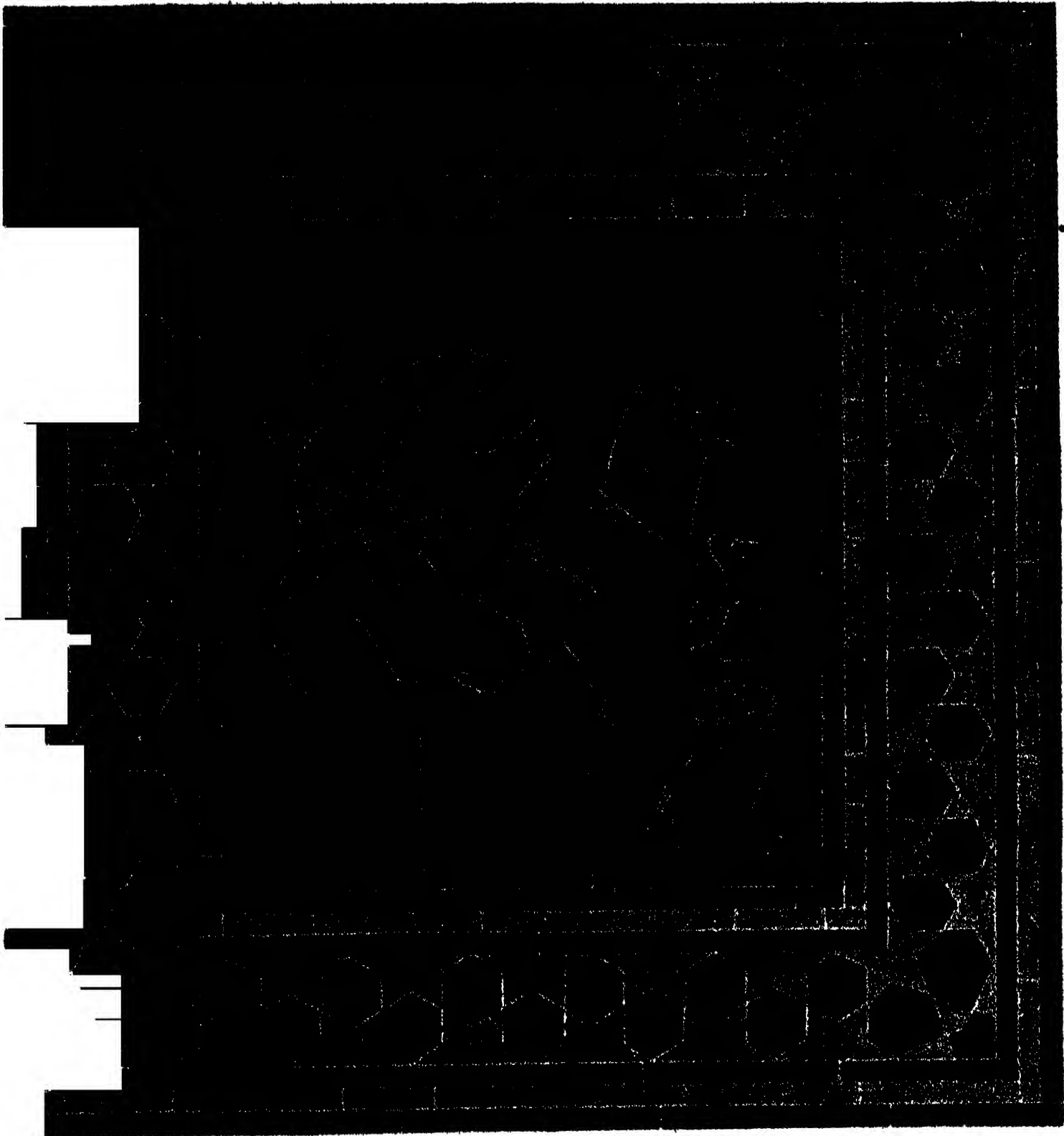




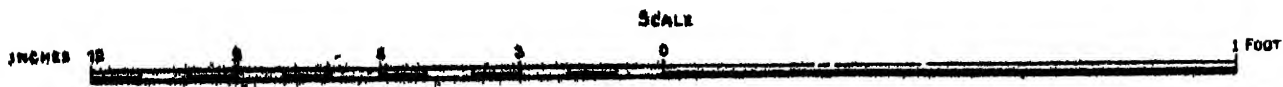
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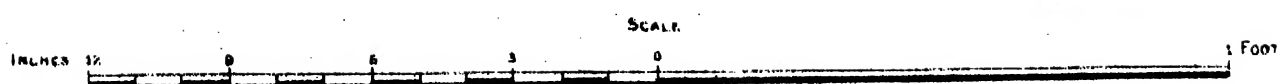
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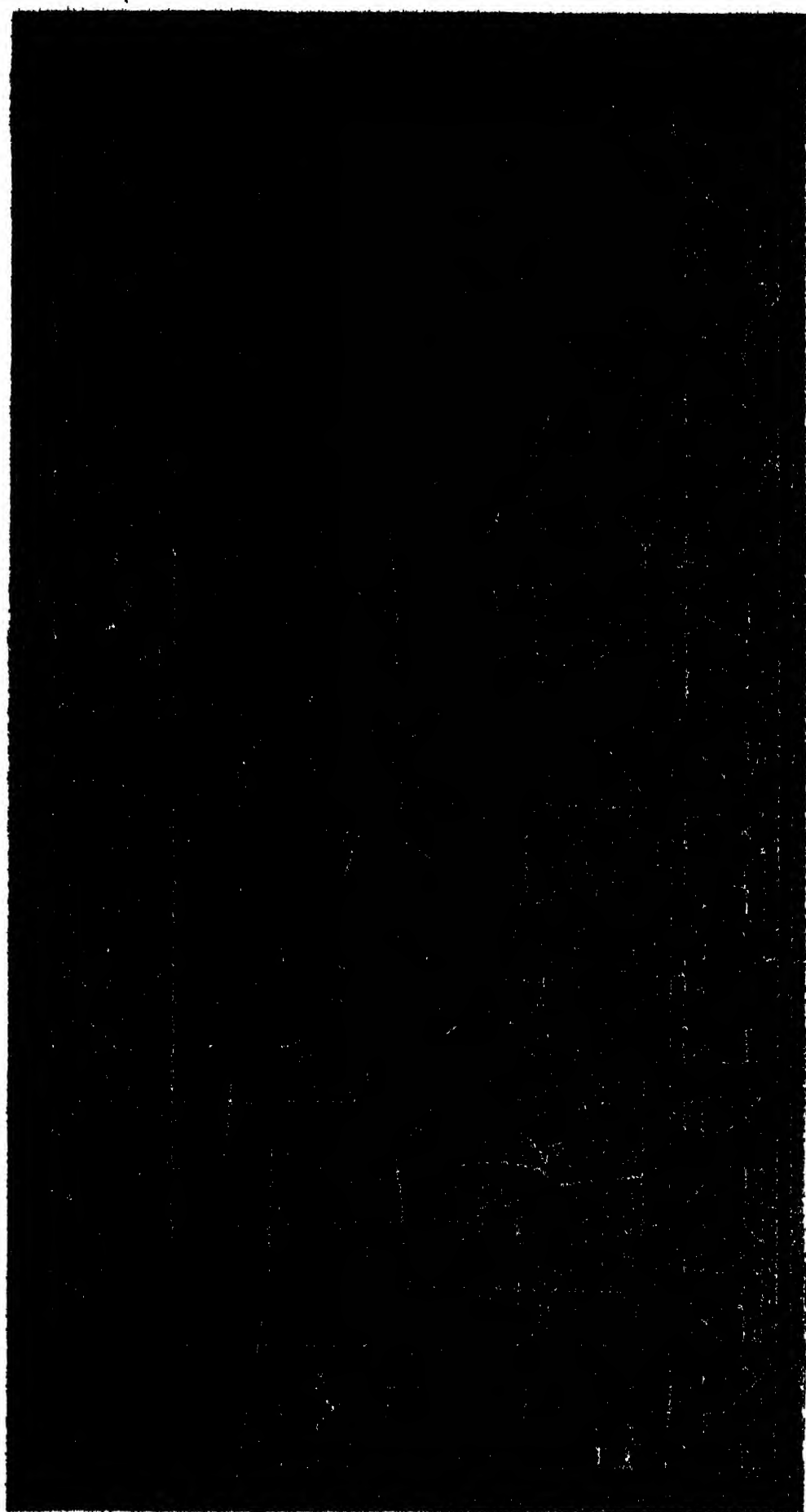


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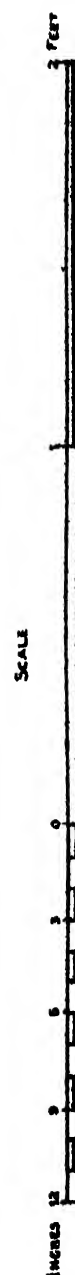








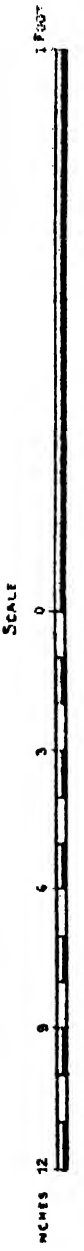
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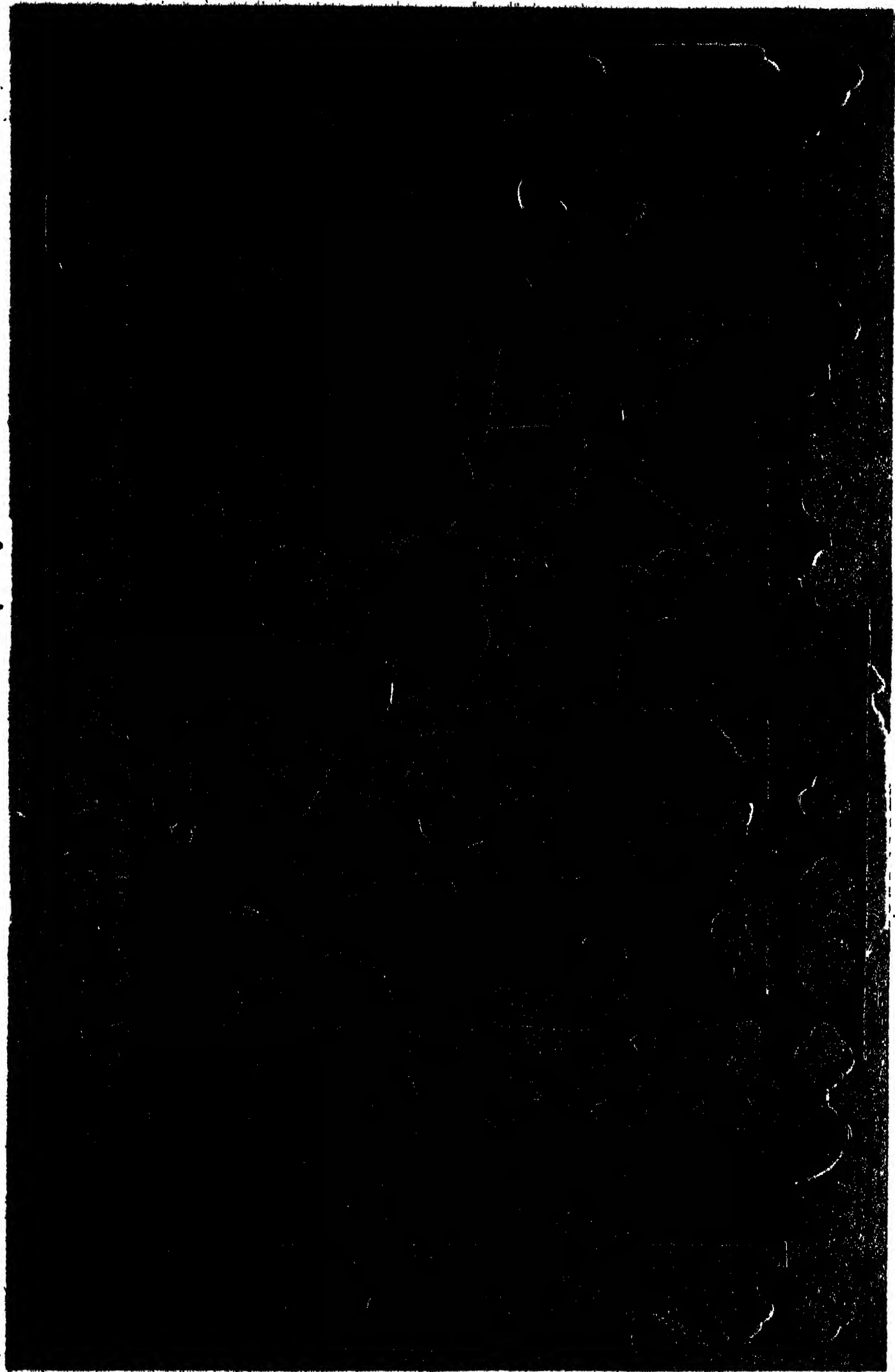




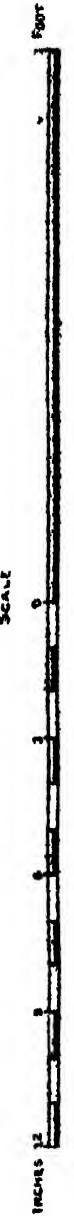
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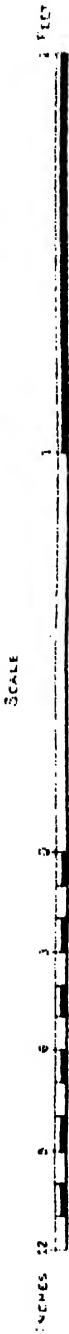








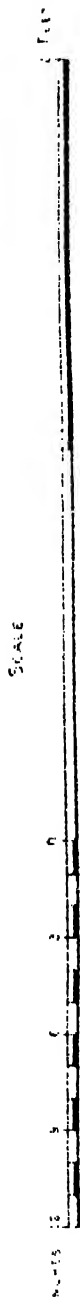
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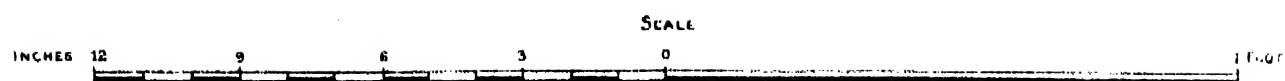
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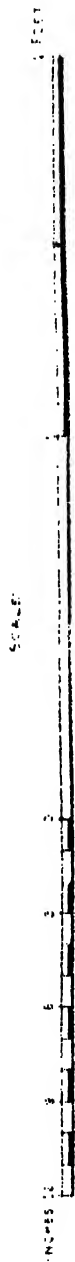
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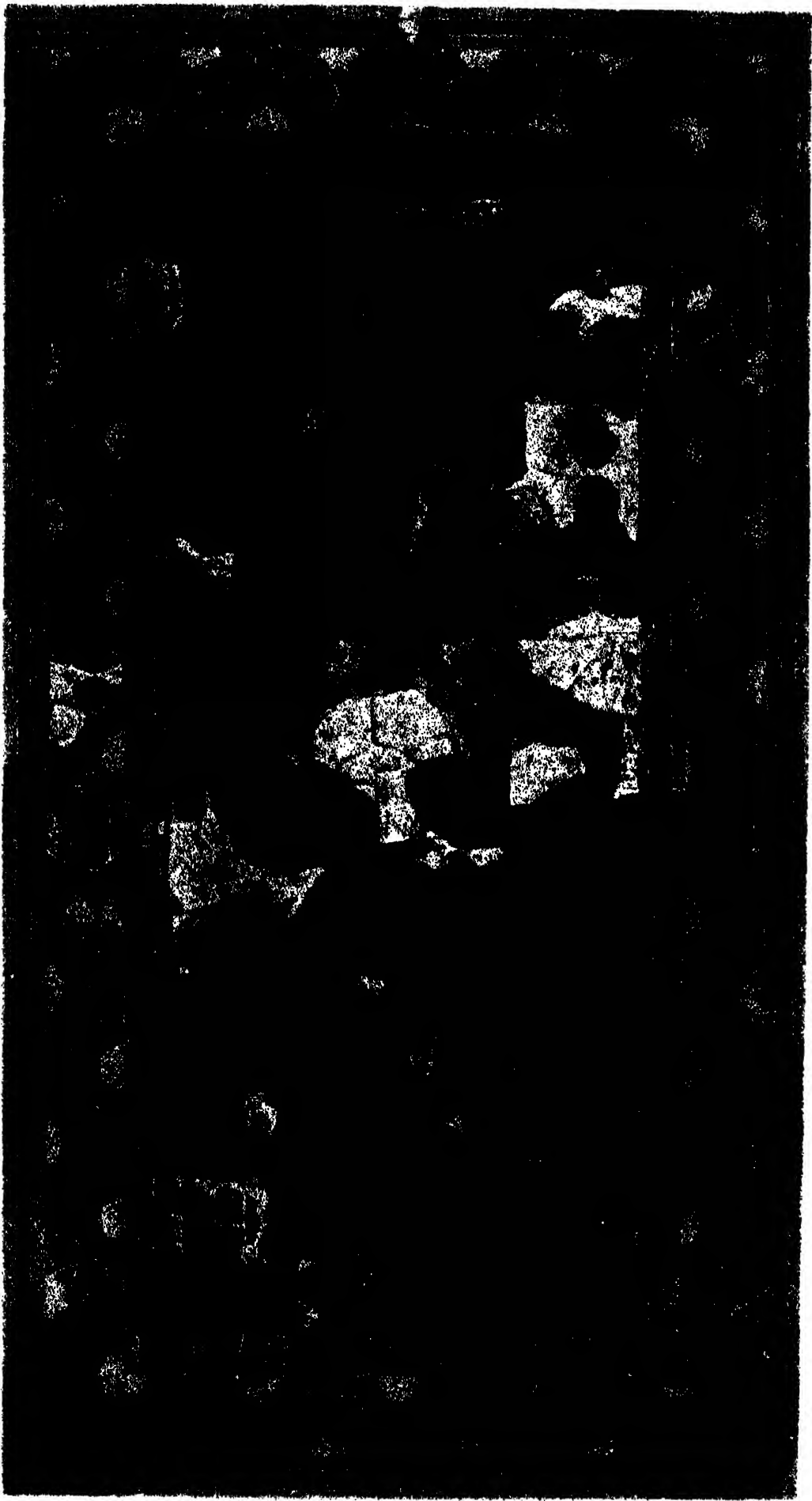


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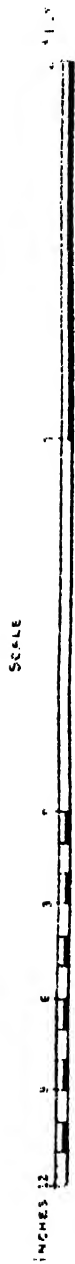




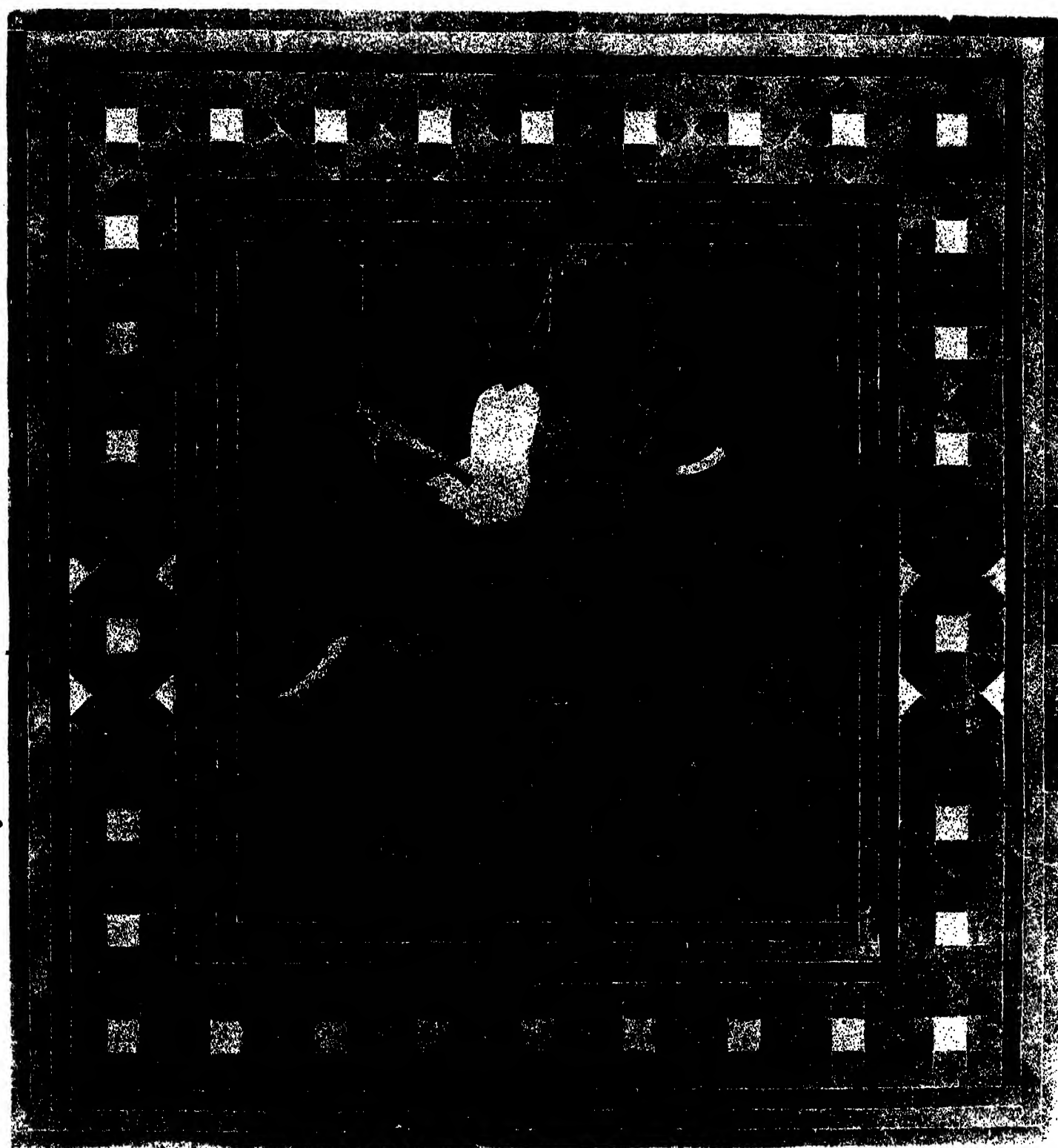




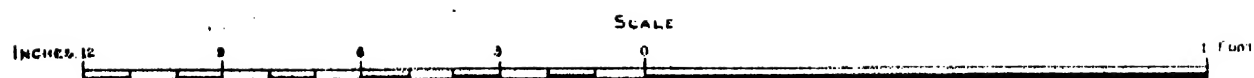
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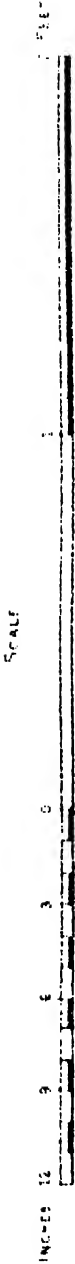
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## CONTENTS.

	PAGES.		PAGES.
<ul style="list-style-type: none"> <li>• The Silk Industries of India and the Personal History of Sir Thomas Wardle. COL. T. H. HENDLEY, C.I.E. ... .. 1—4</li> <li>• Memoir of Sir Thomas Wardle and the Formation of the Silk Associa- tion of Great Britain and Ireland. G. C. WARDLE. ... .. 5—9</li> </ul>		<ul style="list-style-type: none"> <li>Sericiculture and Silk Weaving in India and Kashmir. THE LATE SIR THOMAS WARDLE. ... .. 10—19</li> <li>The Uses of Tasar Silk and Indian Dyes, &amp;c. COL. T. H. HENDLEY, C.I.E. ... .. 20—21</li> <li>The Hill Forests of Western India. THE LATE H. M. BIRDWOOD, C.S.I. 23—32</li> </ul>	



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## TILE-MOSAICS OF THE LAHORE FORT.

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### II. THE LAHORE FORT.

The palace of the Great-Moghuls at Lahore does not enjoy as great a celebrity as those of Agra, Fatehpur Sikri and Delhi. It should be remembered that Lahore was only a secondary capital of the Moghul empire. In the 18th century it was hardly used as a royal residence, though we may assume that the governors of the Punjab resided in it. From the time of the Afghan invasions the king of Delhi lost all influence in this province. For a short period the splendour of sovereignty was revived within the ancient walls, when Ranjit Singh united the scattered Sikh forces in his powerful hand and made Lahore his capital (1799). The death of the Lion of Lahore (1839) was soon followed by the annexation of the Punjab (1849) and from that time the Fort was garrisoned by British troops.

Though most people will agree with Bernier that the palace of Lahore does not display the same magnificence as those of Agra and Delhi, it possesses no small amount of interest both architectural and historical. Whereas the Delhi palace was entirely built on one plan and at one time and consequently excels by unity and clearness of composition, it does not exhibit that curious variety of style noticeable in the Lahore buildings, which were commenced by Akbar, continued by Jehangir and completed by Shah Jehan, and which comprise a few remnants of the ephemeral Sikh rule.

The early Moghul edifices built of profusely sculptured red sandstone are distinguished by features of Hindu architecture—such as brackets with figures of elephants and lions, and friezes of peacocks—which are characteristic of the tolerant rule of Akbar and Jehangir. The magnificent Shah Jehan indulged in the use of white marble adorned in the Tuscan fashion with floral designs of agate cornelian and lapis lazuli.

The only portion of the Fort which may be ascribed to Aurangzeb is the gate facing the Hazuri Bagh and the Badshahi Masjid or Imperial Mosque which was built by the same emperor.<sup>1</sup> The later Moghuls do not seem to have contributed to the Lahore palace. The few additions due to Ranjit Singh and his short-reigned successors are easily recognizable by their gaudy and barbaric splendour. It must, however, be admitted that, though their attempts at embellishing the Moghul palace have had the contrary effect, there is here no evidence of that vandalism which in the days of Sikh rule spoiled so many a venerable monument in the neighbourhood of Lahore.

The historical associations of the Lahore Fort will be best remembered in the course of a detailed account of the various buildings which it contains. But first it will be necessary to review the literary sources from which we derive our knowledge.

The European travellers who had occasion to visit Lahore in the course of the 17th century do not contribute much to our knowledge of the Moghul palace and its buildings. In general their notes on Lahore are lamentably brief, as compared with what we know from the same source regarding the Delhi and Agra forts. It is true that William Finch who spent several months of the years 1610 and 1611 at Lahore devotes some pages to a description of this city in which the palace is treated with considerable detail.<sup>2</sup> But his account does not convey a clear idea of the various courts (most of which are no longer traceable) and of their relative position. Finch dwells on certain pictures representing Jehangir, with his ancestors and nobles among which he notes a picture of Christ, and one of the Virgin Mary. These pictures have—wrongly I believe—been identified with the tile-mosaics which are edited in the present paper.

In the course of my article I shall have occasion to revert to this question. Here it will be sufficient to add that Finch's description of the city of Lahore and of the palace which it contains has been copied first by Joannes de Last (in Latin translation) and subsequently by Sir Thomas Herbert, by the latter in an abbreviated and partly corrupted form. Thevenot in his turn seems to have copied Herbert.<sup>3</sup> From these two authors it

<sup>1</sup>The pavilion known as Naulakh has been ascribed to Aurangzeb, but without authority. See p. 11.

<sup>2</sup>*Peregrinus his pilgrimes*, Vol. IV. pp. 52 ff. Finch arrived at Lahore on the 4th February 1610 (p. 51) and was there still on the 17th May 1610 (p. 58).

<sup>3</sup>Joannes de Last, *De imperio Magni Mogolis ac India vera commentarius e variis auctoribus congestus*. Lugduni Batavorum (London) 1631. T. Herbert, *Some years travels into Africa and Asia the Great especially describing the famous empires of Persia and Indostan*. London 1638. *The Travels of Monsieur de Thevenot into the Levant*. London 1687. Part III. p. 60. Latif (Lahore p. 119) in quoting Herbert wrongly says that the latter visited Lahore in 1626. The truth is that Herbert never visited Lahore at all.



## THE LAHORE FORT.

would appear as if the Fort of Lahore had twelve gates, three on the side of the town and nine towards the country. But a perusal of the corresponding passage of Finch will show that in speaking of "the castle" he means the fortified city. The twelve gates in question are consequently the city gates which are preserved, some in name alone, up to the present day.<sup>1</sup>

Manucci who was settled at Lahore for some time as a successful "Farangi doctor" has left us a chapter on the origin and description of that city, but does not include the palace in his account. Elsewhere he makes occasional mention of the Lahore Fort, but considering his opportunities, the information he supplies is remarkably futile.

François Bernier,<sup>2</sup> the physician of Aurangzeb, who has left us such an accurate and lively description of the Delhi palace, despatches that of Lahore in only a few lines, though he stayed for more than two months in this town on his way to Kashmir (1683). Taverner<sup>3</sup> gives nothing but a résumé of Bernier's account of the capital of the Punjab.

The narratives of the European writers who visited Lahore during the Sikh period are hardly more satisfactory. Dr. J. M. Honigberger<sup>4</sup> who resided at Lahore as physician of Maharaja Ranjit Singh and must have known the locality very well, has published a view of the citadel of Lahore to which is added a brief explanatory note with the names of some of the buildings in and around the Fort. The traveller William Moorcroft<sup>5</sup> who viewed the city of Lahore on the 13th May 1820 under the guidance of the Governor Faqir Nur-ud-Din, devotes a page to the Fort in which he gives a general idea of the aspect of the palace during Sikh rule. "Ranjit Singh," he says, "has cleared away some of the rubbish, and has repaired or refitted some of the ruined buildings of Jehangir and Shah-jehan; but his alterations have not always been made with good feeling or taste." He was the first to notice the tile decoration on the Fort wall.

I may note here that we possess an excellent map of the Lahore Fort in the Sikh period. The original which belonged to the late Faqir Qamr-ud-Din, son of Faqir Nur-ud-Din just mentioned, has been copied and reproduced several times.<sup>6</sup>

It is strange that, even since the British occupation afforded better opportunities for the study of the Lahore palace, the subject has received so little attention. Mr. J. H. Thornton<sup>7</sup> included a brief description of the Fort in his handy guide-book of Lahore. He fully recognized the importance of the tile decoration on the Fort wall as by far the most remarkable feature of the palace. But for the rest his account, which is mainly based on local tradition, is insufficient both as regards the architecture and history of the buildings.

Muhammad Latif<sup>8</sup> in his work on the antiquities of Lahore adds very little to Mr. Thornton's description. He consulted—it is true—native historians, but did not utilize them to the extent he might have done. In quoting Sir Thomas Herbert, he changed both spelling and wording of the passage and drew wrong conclusions from it. In Jehangir's inscription in the Fort he read the year as A.H. 1007 instead of 1027.

It is gratifying that, whereas the narratives of European travellers and writers fail to do justice to the Lahore palace, we possess some very full and remarkably accurate notices in the works of Muhammadan historians of the 17th century. I note particularly the *Badshah Namah* by Mulla 'Abdul Hamid and the *'Amal-i-salih* by Muhammad Salih. Both these authors were citizens of Lahore. The passages relating to the Lahore Fort from these and other works have been collected and discussed with much judgment by Maulwi Nur Bakhsh in an able paper published in the first Annual Report of the Archaeological Survey of India.<sup>9</sup> In the light of those contemporaneous accounts several statements of later writers have had to be corrected or modified.

The researches of Nur Bakhsh have enabled us to make a clear distinction between the early Moghul buildings raised by Akbar and Jehangir and those added by Shah Jehan.

The Fort contains two Persian inscriptions, relating to these two building periods. One, dated in the twelfth year of Jehangir's reign or A.H. 1027 (A.D. 1617-18) records the completion of the early Moghul palace by Marmur Khan. It has been rendered: "In the twelfth year of the blessed accession of His Imperial Majesty, the shadow of God, a Solomon in dignity, a Kayomars in state, an Alexander in arms, the asylum of the Caliphate, the Emperor Nur-ud-Din Jehangir, the son of the Emperor Jalal-ud-Din Akbar, the Champion of the Faith, corresponding to A.H. 1027 [A.D. 1617-18], the building of this auspicious palace was completed under

<sup>1</sup> Manucci, *Storia de Mogor*. Vol. II. p. 185, cf. Latif, *Lahore* p. 86. <sup>2</sup> *Voyages* (Amsterdam 1690) Vol. II p. 156. <sup>3</sup> *Six Voyages* (Paris 1678), Vol. II p. 64.

<sup>4</sup> *Früchte aus dem Morgenlande* (Vienna 1851) pp. 585 f. English transl: *Thirty-five years in the East* (London 1852) Vol. I p. 198.

<sup>5</sup> W. Moorcroft and G. Trebeck, *Travels in the Himalayan provinces of Hindustan and the Punjab etc.* (London 1841) Vol. I p. 104.

<sup>6</sup> *Guid. Preservation of National Monuments, Journal of Indian Art*, Vol. VI (1896). *India; photographs and drawings of historical buildings*. London 1896) No. 77. The plan was traced in 1883 in Major Cole's Office.

<sup>7</sup> *Lahore* (Lahore 1876) pp. 53-58.

<sup>8</sup> *Lahore; its history, architectural remains and antiquities* (Lahore 1892) pp. 119-127.

<sup>9</sup> *Archaeological Survey of India. Annual Report 1902-03* (Calcutta 1904) pp. 218-224.

quadrangle of the Diwan-i-'amm which measured 730 by 460 feet and was enclosed on four sides by a range of the superintendence of his most humble disciple and slave—the devoted servant Ma'mur Khan."

The second inscription painted over the Elephant Gate (Hathi Pol) is dated in the fourth year of Shah Jehan or A.H. 1041 (A.D. 1631-32) and contains the praise of the Shah Burj or Royal Tower completed in that year by 'Abdul Karim. It runs as follows:

- "The king, a Jamshed in dignity, a Solomon in grandeur, a Saturn in state."
- "Who has carried the banners of his glory beyond the sky and the sun,"
- "The second Lord of Constellation,<sup>1</sup> Shah Jehan, to whom in justice and generosity Nausherwan is no equal nor Afredun a peer,"
- "Ordered a Royal Tower (Shah Burj) to be erected which for its immense height"
- "Is like the Divine Throne beyond imagination and conception."
- "In purity, height, elegance and airiness, such a tower"
- "Has never appeared from the castle of the sky nor will."
- "The sincere servant and faithful disciple, 'Abdul Karim,"
- "After the completion of the building devised this date:"
- "For ever like the fortune of this king, a Jamshed in arms."
- "May this auspicious lofty tower remain safe from destruction!"
- "A.H. 1041, the 4th year of the Accession."<sup>2</sup>

Nur Bakhsh has rightly pointed out that this Shah Burj is no other than the Saman Burj which occupies the north-west corner of the Fort. This is evident from the very accurate description of this part of the palace by 'Abdul Hamid in his Badshah Namah. The assumption that the inscription refers to some other tower which has disappeared is, therefore, to be rejected.

The plan of the Shah Burj had been executed by Yaminu-d daulah Asif Khan who had been appointed governor of Lahore in the year 1625. Besides this building Shah Jehan erected the large hall of the Diwan-i-'amm, for which he had issued orders in the first year of his reign.

Muhammad Salih mentions that in 1633 Shah Jehan ordered the construction of a new Ghush-khanah and Khwabgah under the supervision of Wazir Khan, the Physician and Governor of Lahore, whose name is best known in connection with the magnificent mosque which he founded in that city.

We read again in the Badshah Namah that in November 1644 the Emperor inspected a marble edifice overlooking the river Ravi which has recently been completed and was probably one of the two buildings ordered eleven years before. I presume that it is the same as the marble pavilion known as Chhoti Khwabgah.

It will be seen from the published plan that the Lahore Fort has roughly the shape of a rectangle measuring 1250 by 1100 feet. The main gates are in the centre of the west and east walls. A glance at the plan will show that the orientation of the western gate is not in agreement with that of the Fort and the buildings which it contains. The position of the gate is evidently determined by that of the Hazuri Bagh enclosure which in its turn must have been built in connection with the Imperial Mosque or Badshahi Masjid of Aurangzeb. There can be little doubt that the Hazuri Bagh enclosure was constructed as a fore-court to the Mosque and at the same time as a link between the Mosque and the palace. Latif may be right in saying that originally it served the purpose of a *sarai* and was only made into a garden by Ranjit Singh. The well-known *baradari* in the centre, built from the spoils of Muhammadan tombs, is certainly a monument of the famous Sikh soldier-king who often held his *darbar* in it.<sup>3</sup>

Latif calls the western gate to the Fort the Akbari Durwazah and asserts that it was built by and named after the Emperor Akbar. But from what has been remarked above it follows that this gate cannot be anterior to the Imperial Mosque which was built in A.D. 1673. The style also points to some such date. The name Hazuri Bagh Durwazah seems, therefore, more appropriate. The eastern gate which leads into the City is called Masti Durwazah or "Gate of Intoxication."

Since the British occupation both the main gates have been bricked up, and sole access to the fortress is gained through a postern dating from the year 1853, behind which rises the gorgeously decorated Hathi Pol or Elephant Gate which will be fully noted in the sequel. It once formed a private entrance to the apartments occupied by the emperor and his ladies. At present a ramp of modern military construction leads along the back of the Moti Masjid to the centre of the Fort.

From the so-called Akbari Durwazah a curiously twisted passage led up to the western entrance of the great

<sup>1</sup> Sahib-i-Qiran i.e. One born under an auspicious conjunction of Jupiter and Venus; a fortunate and invincible king. It is the title of Amir Timur. The Emperor Shah Jehan is entitled Sahib-i-Qiran-i-Sani i.e. the second Amir Timur.

<sup>2</sup> Public inscriptions at Lahore, J.A.S.B., Vol. XXVII, pp. 310, 312; Latif, Lahore, p. 121.

<sup>3</sup> Honigberger, *op. cit.* p. 580 No. 8.

vaulted chambers with central gateways on the west, south and east sides. Of this large cloister nothing now remains except the little court in front of the Pearl Mosque. The front-wall of this court formed part of the west side of the large enclosure, and still conveys some idea of its appearance. Its destruction for military purposes is the more to be deplored by the antiquarian, as this arcade must have been one of the oldest portions of the Lahore Palace. There is reason to suppose, as Nur Bakhsh has pointed out, that it existed already in the reign of Akbar, as the number of bays shown on the map of the Sikh period very closely agrees with that of 114 mentioned by Al Badaoni in his account of the celebration of the New Year's day by Akbar on the 29<sup>th</sup> December, 1587.

Over the entrance to the little court-yard just noted we find a white marble slab with the inscription of Jehangir which records the completion of the palace in A.D. 1617-18 by Ma'mur Khan. This inscription—it should be noted—does not refer to the construction of the Pearl Mosque, as Latif seems to assume. The term *daulat-khanah* literally "House of Fortune" denotes a palace and not a mosque. The palace in question consisted evidently of the large quadrangle of the Diwan-i-'amm constructed by Akbar and the smaller square adjoining it to the north which is now usually designated as the quadrangle of Jehangir. These are no doubt the two courts, mentioned by Sir Thomas Herbert, "pointing out two ways; one to the King's Durbar and Jarneo (where hee daily shewes himselfe unto his people) the other to the Devon-Kawn or great Hall (where every eve from eight to eleven he discourses with his Umbraves.)"<sup>1</sup>

The open pillared hall which projects into the large court from the centre of the north side is the Diwan-i-'amm. It has been noted above that this building is due to Shah Jehan, who ordered its construction in the first year of his reign at the same time with that of a similar edifice in the Agra Fort. The Court chronicler Mulla 'Abdul Hamid of Lahore states that during the reigns of Akbar and Jehangir the courtiers who attended the daily public audience of the Emperor, were protected against rain and sunshine only by means of an awning. But Shah Jehan ordered that a hall of forty pillars should be built in front of the *jharoka* of the Daulatkhana-i-khass-o-'amm. The *jharoka* (the *jarneo* of Sir Thomas Herbert!) is the balcony throne on which the Emperor made his daily public appearance.

The forty-pillared hall (the ten forming the last row are in reality pilasters) known as Diwan-i-'amm must appeal to our curiosity as one of the first creations of the magnificent Shah Jehan. But we feel disappointed in finding that the whole superstructure as well as the pavement is modern, whilst the red sandstone shafts do not fit on the carved bases. Yet an interesting feature is preserved in the remnants of a white marble railing which once connected the outer row of pillars. The large platform on which the hall is raised was enclosed by a second railing of red sandstone, of which a large portion is still extant. All travellers who have witnessed the daily court of the Great Moghul refer to these railings which separated the different classes of nobles in attendance.

After the British occupation the ancient throne-hall of Shah Jehan was turned into a barrack. The outer archways were bricked up and the building enclosed within a verandah. A few years ago these unsightly excrescences have been removed, but even now this barren building, silent and solitary in the midst of a dusty barrack-yard is only a skeleton of the imperial hall of Shah Jehan in the days of its splendour when the descendant of Timur sat on the marble throne, and the hall and the adjoining court hung with banners and tapestry were thronged with *amirs* and *rajahs* in rich attire, the whole offering a rare spectacle of kingly magnificence.

From the back of the edifice just described we overlook the lesser quadrangle apparently known in Sikh times as Akbari Mahall, but generally attributed to Jehangir. It belongs in any case to the early Moghul period, as is obvious from the two rows of buildings along the east and west sides of the quadrangle, which are distinguished by porticoes of red sandstone with broad eaves supported on brackets in which figures of elephants, lions and peacocks have been introduced.

Before leaving the group of early Moghul buildings, we note in the centre of the river front a large building which on the map is indicated as Khwab-gah, i.e. Sleeping Room. To distinguish it from Shah Jehan's building of the same name, it is usually called Bari Khwabgah or Greater Sleeping hall. The present building seems to belong to the Sikh period and does not possess any architectural beauty.<sup>2</sup> It is, however, highly probable that it occupies the place of the Private Audience Hall or Diwan-khanah—the "Devoncan," in which according to William Finch the king sat the first part of the night, commonly from eight to eleven.

Between the Bari Khwab-gah and the buildings used as a Roman Catholic chapel there is a pavilion apparently of Sikh origin and now closed in by modern structures. To the west of the Khwab-gah there was a similar pavilion now demolished but shown on the old map. Here it was that Dilip (*enlgo* Dhuleep) Singh, the 17<sup>th</sup> Raja of the Punjab, was born.

<sup>1</sup> The word *Umbraves* (as Bernier has it) is Arabic *umara* the plural of *amir* "a Lord."

<sup>2</sup> From the Sikh map it would appear that Maharaja Ranjit Singh also used it for his bed-chamber.

The buildings to the west of Jehangir's Quadrangle form a second group due to his son and successor Shah Jehan. They are distinguished from the early Moghul palace by a greater costliness of material and richness of decoration, the carved red sandstone being replaced by white marble inlaid with mosaics of coloured stones. At the same time they do not display the grandness of design peculiar to the two large quadrangles of Akbar and Jehangir and lack the charm of the Hindu element introduced in the earlier buildings.

Adjoining Jehangir's Quadrangle to the west there is a small court still occupied by a garden which has lately been laid out again in the formal style of the Moghul period. The centre is marked by a marble platform which contains a water reservoir. On this platform there stood in the days of Sikh rule a pavilion (*baradari*) of gilt silver, which is said to have been sold by auction in 1849. To the north of this garden we notice an open marble pavilion, indicated on the Sikh map by the name of Khwab-gah. To distinguish it from the building of the same name in Jehangir's Quadrangle, it is usually designated as Chhoti Khwabgah "the lesser Sleeping-room." This was probably one of the two buildings, the construction of which Shah Jehan ordered in A.D. 1633. But whether it represents the Ghosl-khanah or the Khwabgah mentioned by Muhammad Salih, it is impossible to decide. It is true that in Sikh times it was known by the latter appellation. But the name may easily have become changed, since the Moghul emperors and their governors had ceased to occupy the Lahore palace.

Looking down from the Khwabgah we notice at the foot of the Fort wall a ruined structure which on the Sikh map is called Arz-gah, whereas Mr. Thornton refers to it as "the Arz-begi where the *onra* or nobles of the court assembled in the morning to receive the Emperor's commands." The term '*Arz-begi*,' however, can only mean "an officer who reads letters and representations to a king." The word '*arz-gah*' appears to be a more suitable term.

The next court is called Khil'at-khanah on the map which indicates that—in Sikh times at least—distinguished courtiers, nobles and ambassadors were here invested with the robe of honour (Persian *khil'at*). On the south side of this court were the royal baths (*Hammam-i-badshahi*) known in Sikh times by the name of Sheron-vala Hammam on account of the spouts in the shape of lions' heads, such as still may be seen in Sher Singh's Hammam. On the opposite side there exists a small marble pavilion with Bengali roof now enclosed in the quarters of the commanding officer and used as a bath-room. On the Sikh map it is indicated by the name of "Hall of Perfumes," perhaps a rendering of Khas Khanah.

We now enter a smaller court, in which we notice a gate of white marble which occupies the centre of its southern enclosure. The north-west corner of the square is occupied by an open pavilion which dates from the reign of Ranjit Singh and was used by him as a *Kachahri* or court of justice. Its general appearance is not ungraceful, but its Sikh origin is clearly indicated by certain details, such as the combination of white marble and red sandstone brackets, and that of marble trellis screens with red sandstone posts (Arabic *mutakka*) in the ornament railing which is placed on the roof of the building. The curious frescoes on the north wall relating to the legend of Krishna are evidently the work of one of Ranjit Singh's court-painters.

We have now reached the last court which occupies the north-west corner of the palace and is known by the name of Saman Burj. The word *saman* is an abbreviation of Arabic *musamman* meaning octagonal. It will be noticed that the Shish Mahall is indeed built on a semi-octagonal plan. The appellation Saman Burj, however, dates only from the Sikh period, whereas the original name was Shah Burj or Royal Tower. This is evident from a passage in the Badshah Namah in which 'Abdul Hamid gives a very accurate description of the buildings now known as Saman Burj. Thus there cannot be the slightest doubt that the inscription over the Hathi Pol, which records the completion of the Shah Burj by 'Abdul Karim in the 4th year of Shah Jehan's reign or A.D. 1631-32, refers to the same group of buildings. It will be seen in the sequel that the gate over which the inscription is placed, provides direct access to the Saman Burj by means of a twisted flight of steps and through the marble gateway noticed in the adjoining court-yard. It was the private entrance to the imperial palace.

In his account of the Shah Burj the court chronicler notices first of all the large hall, now known as Shish Mahall, which occupies the north side of the square. It was here that in March 1849 the sovereignty of the Punjab was assumed by the British Government, as is recorded on a tablet let into the wall. As noticed above, it is built on a semi-octagonal plan. Its longest side, facing the square, has a row of double pillars of inlaid white marble forming five archways surmounted by an eave of the same material. Interiorly the spandrels over the arches are decorated with *pietra dura* which has marvellously escaped the Vandals who have mutilated this kind of work wherever it is found. The graceful vine pattern over the two outer arches deserves special notice.

The main room, a rectangular hall of noble dimensions, has a dado of white marble, while the upper portion of the walls and the ceiling are decorated with a mosaic of glass laid in gypsum which has given the building its name of Shish Mahall or "Palace of Mirrors." This name—I may note—is not mentioned by 'Abdul Hamid who speaks of the building simply as a hall (*arwan*). He refers to the mirror ornamentation under the curious

name of "Aleppo glass." It will be noticed that this decoration belongs to two different epochs. The ceiling with its prevailing aspect of subdued gilt made undoubtedly part of the original edifice. It is rich without being gaudy. The wall decoration, on the contrary, is decidedly vulgar, and the introduction of sherds of blue-and-white china bear testimony to a childish taste. It is typical Sikh work and, if any proof is wanted, I may note that, when a few years ago a part of the glass work was peeled off, the wall beneath was found to be painted. But it appears that this wall painting also dates only back to Sikh times.

The roof of the Shish Mahall is encumbered with a curious medley of structures dating from the Sikh period. The small building which occupies the centre of the roof was built by Maharaja Ranjit Singh. The rest is said to have been added by Sher Singh, except the pavilion on the south-east corner which is ascribed to Nau Nihal Singh.

Next to the Shish Mahall, the author of the *Badshah Namah* notes on the west side of the Shah Burj "a pavilion of marble, whose mosaics of cornelian, coral and other precious stones excite the emulation of the workshop of Manes." This building is evidently the open pavilion known as Naulakha. This name—so tradition holds—refers to its having cost nine lakhs of rupees. But the court chronicler mentions neither the name Naulakha nor the extravagant sum which would account for it. We may, therefore, assume that both the name and the supposed tradition are comparatively modern. I presume that they date only as far back as the Sikh period. Another "tradition" repeated both by Thornton and Latif which ascribes this pavilion to Aurangzeb, is also to be rejected on the evidence of the *Badshah Namah*. Like the other buildings of the Shah Burj, it belongs to the beginning of Shah Jehan's reign, and it will be noticed that the *pietra dura* decoration of the marble dado is entirely in the style of his reign. But the inlay in the panels above the dado is of a very different type and bears a strong resemblance to some of the work found on the Golden Temple at Amritsar. I am, therefore, inclined to think that it was added in the days of Ranjit Singh. The painting and mirror work in the wooden ceiling is certainly Sikh work.

Apart from such few additions as have been noted, Sikh rule has not materially interfered with the buildings of the Shah Burj; and from the subsequent military occupation it has suffered less than any other part of the Fort. Thus we have this interesting corner of Shah Jehan's palace still practically in the same condition as it was described by his court chronicler.

If we retrace our steps to the adjourning court and pass through the marble gate noted above, we enter a rectangular court-yard which contains a little temple of the Sikh period. Another gate on the north side of this square brings us to the top of a flight of stairs which, twice forming a right angle to the left, leads down to the Hathi Pol or Elephant Gate. From this point we can conveniently start our survey of the tile decoration which covers the west and north fronts of the Fort wall.



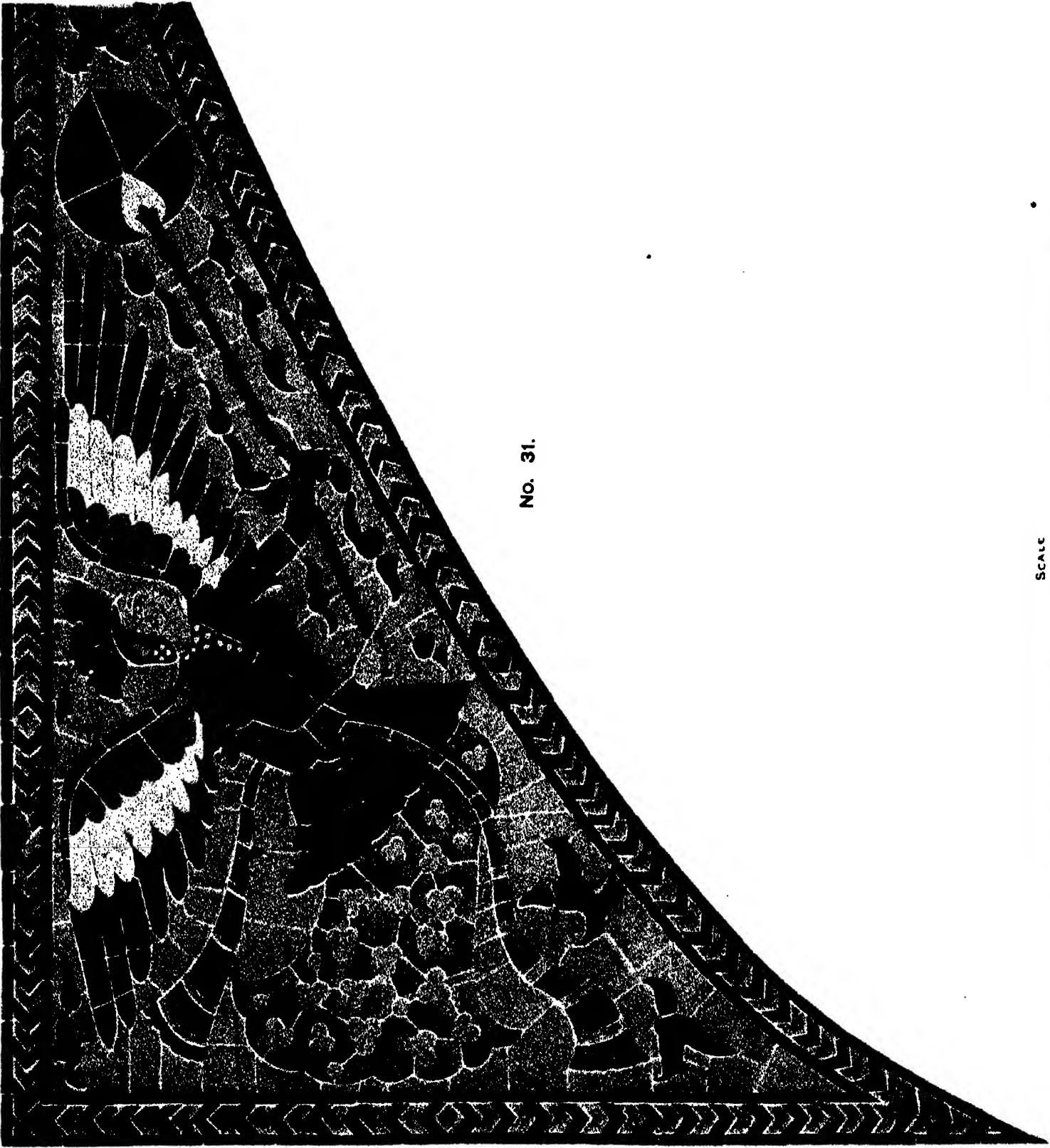


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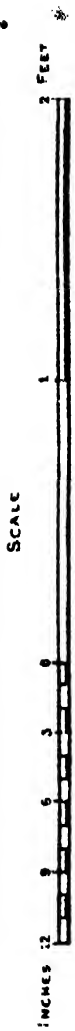
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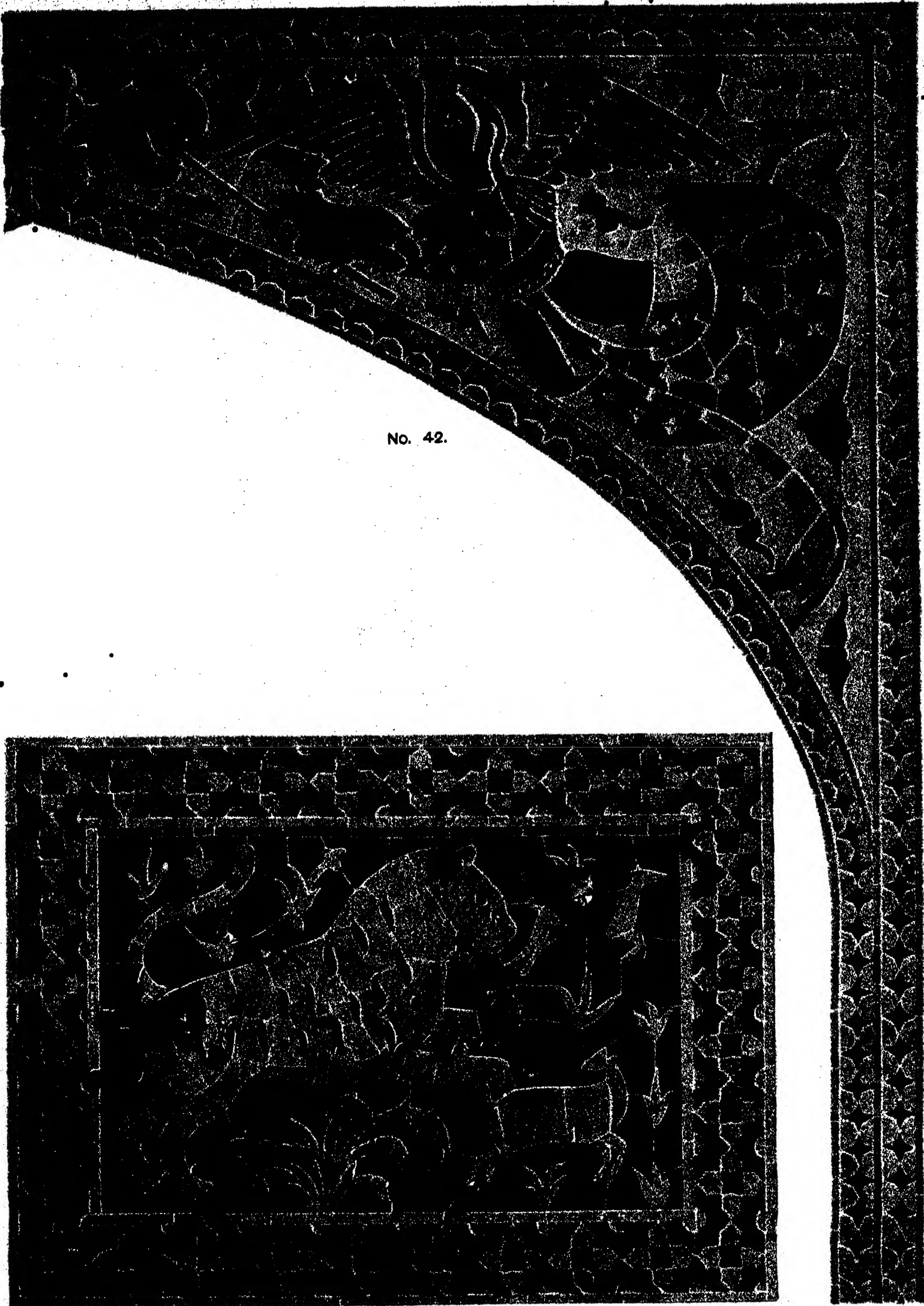






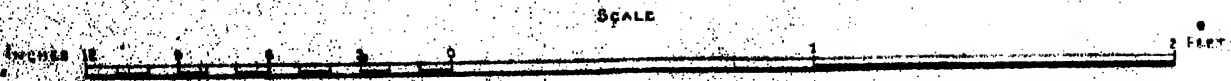
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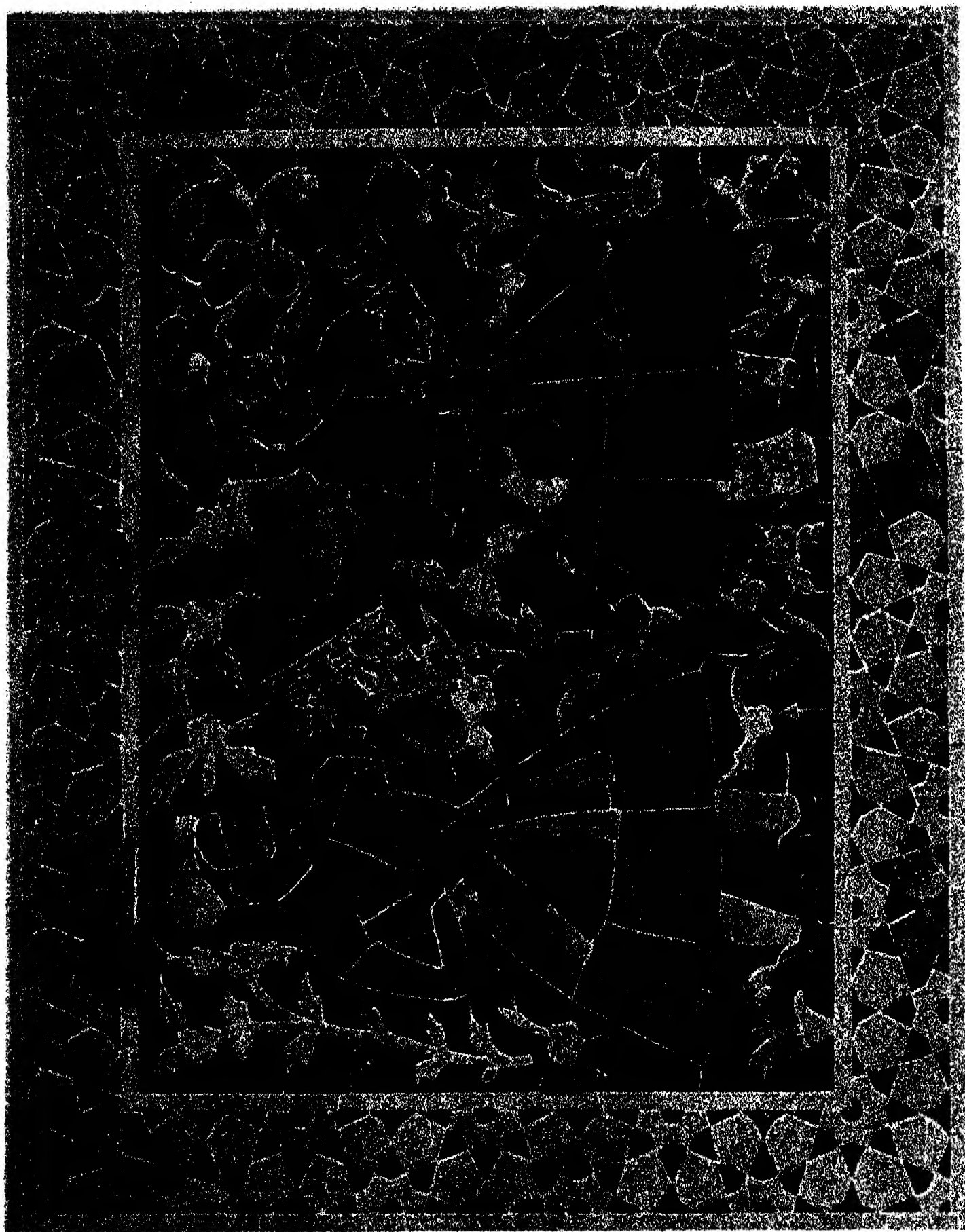


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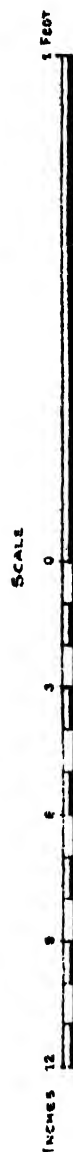
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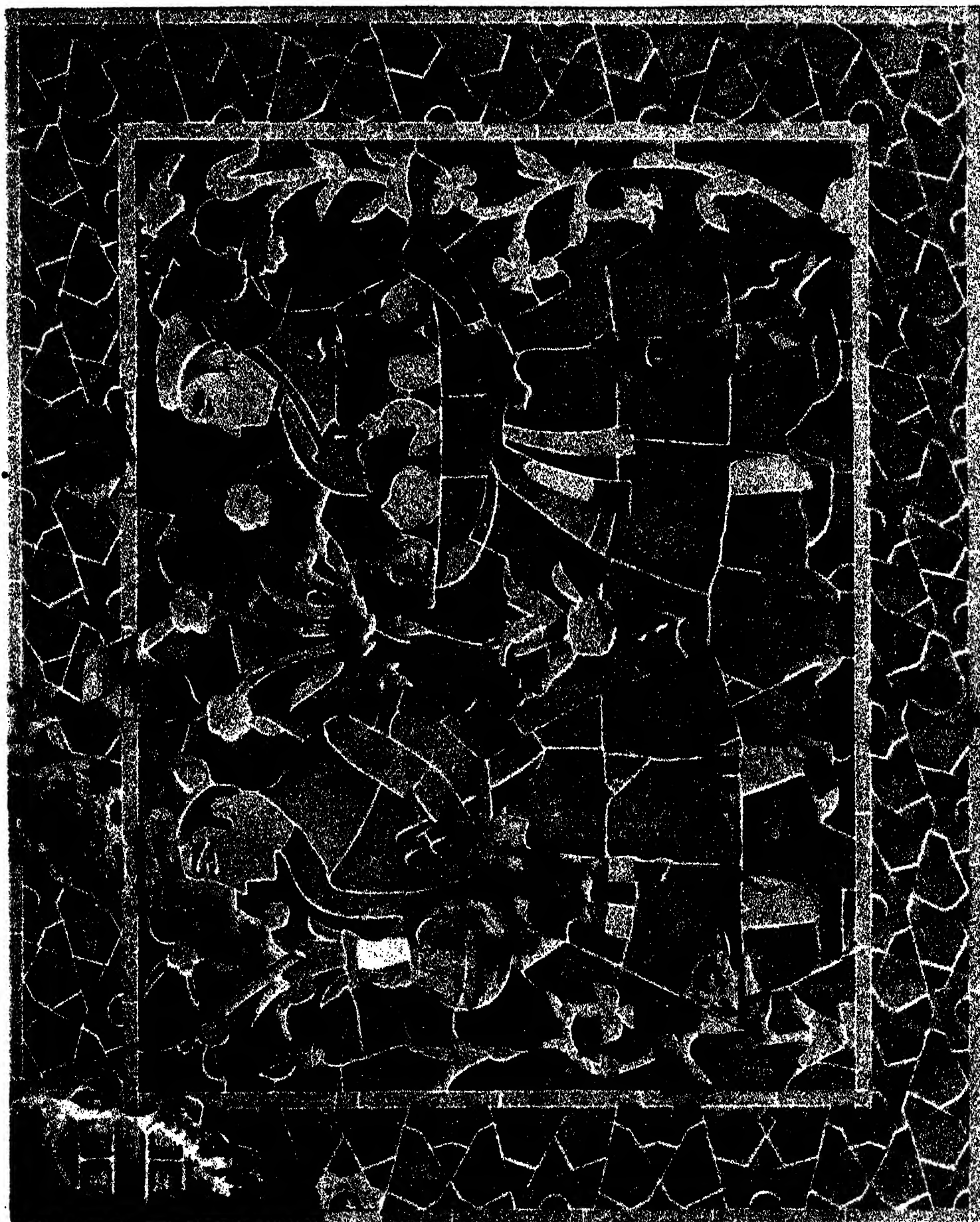




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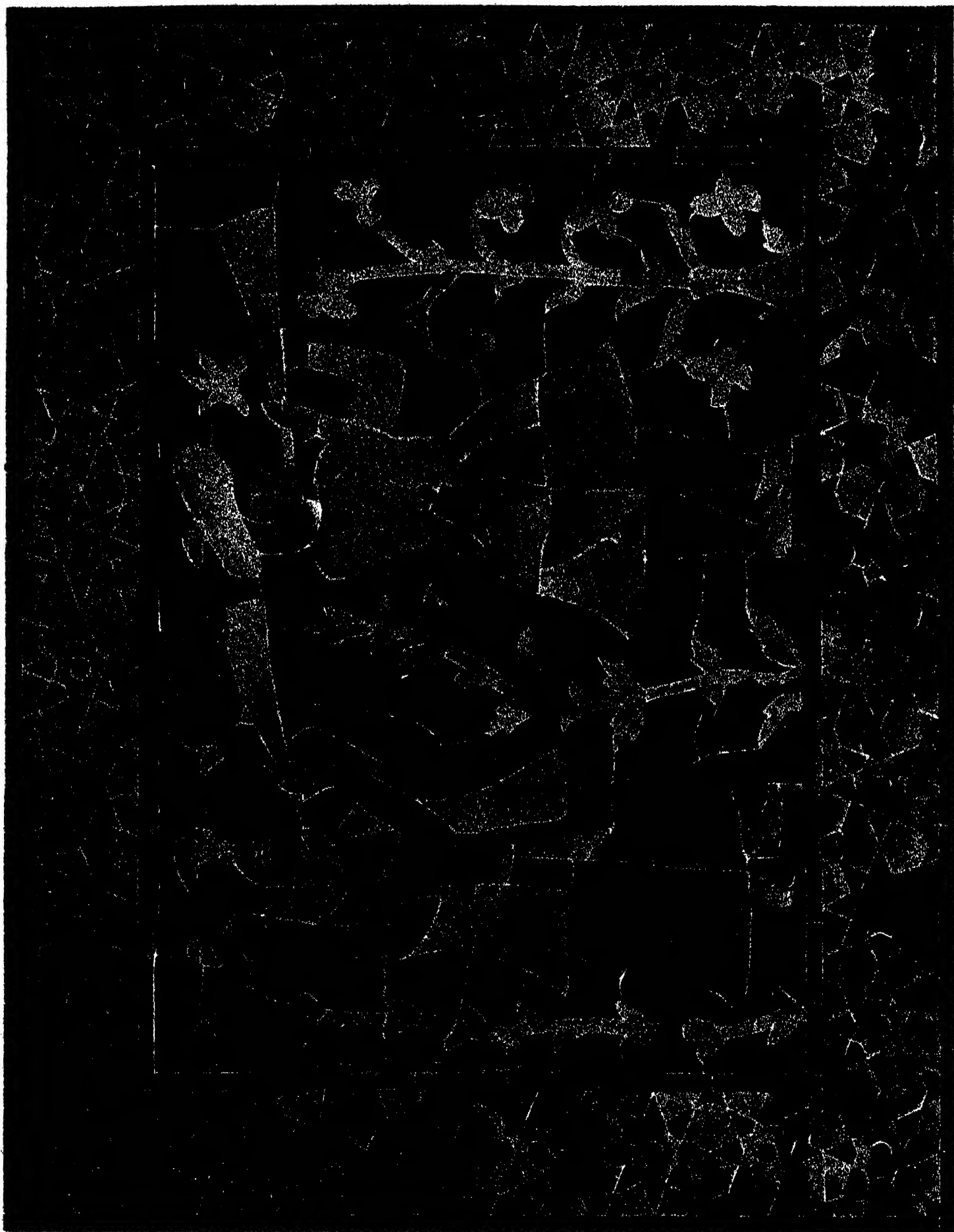
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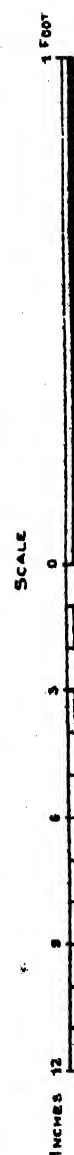




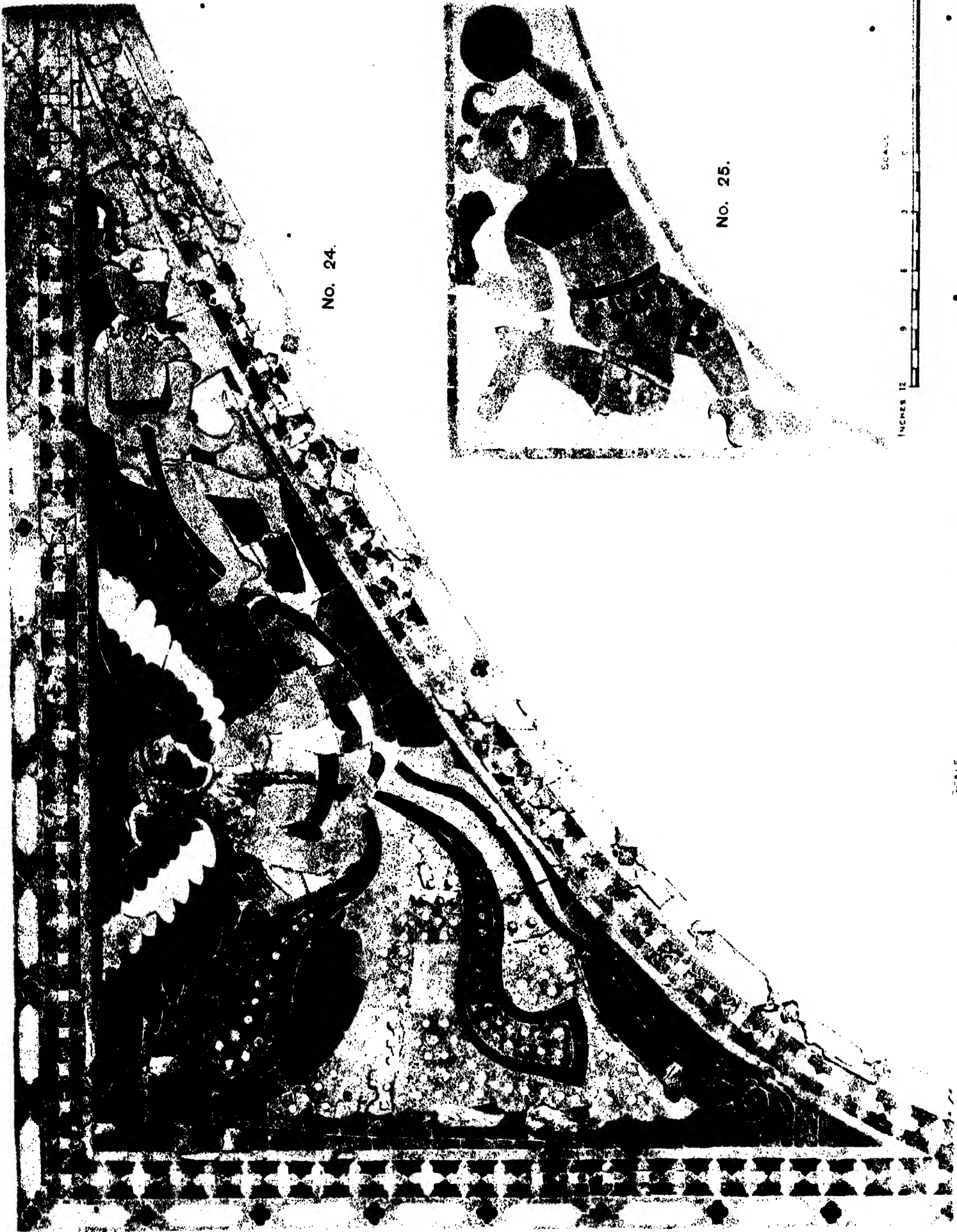




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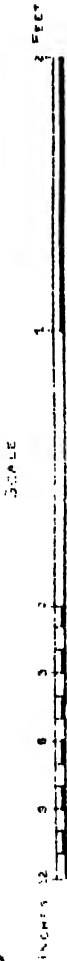




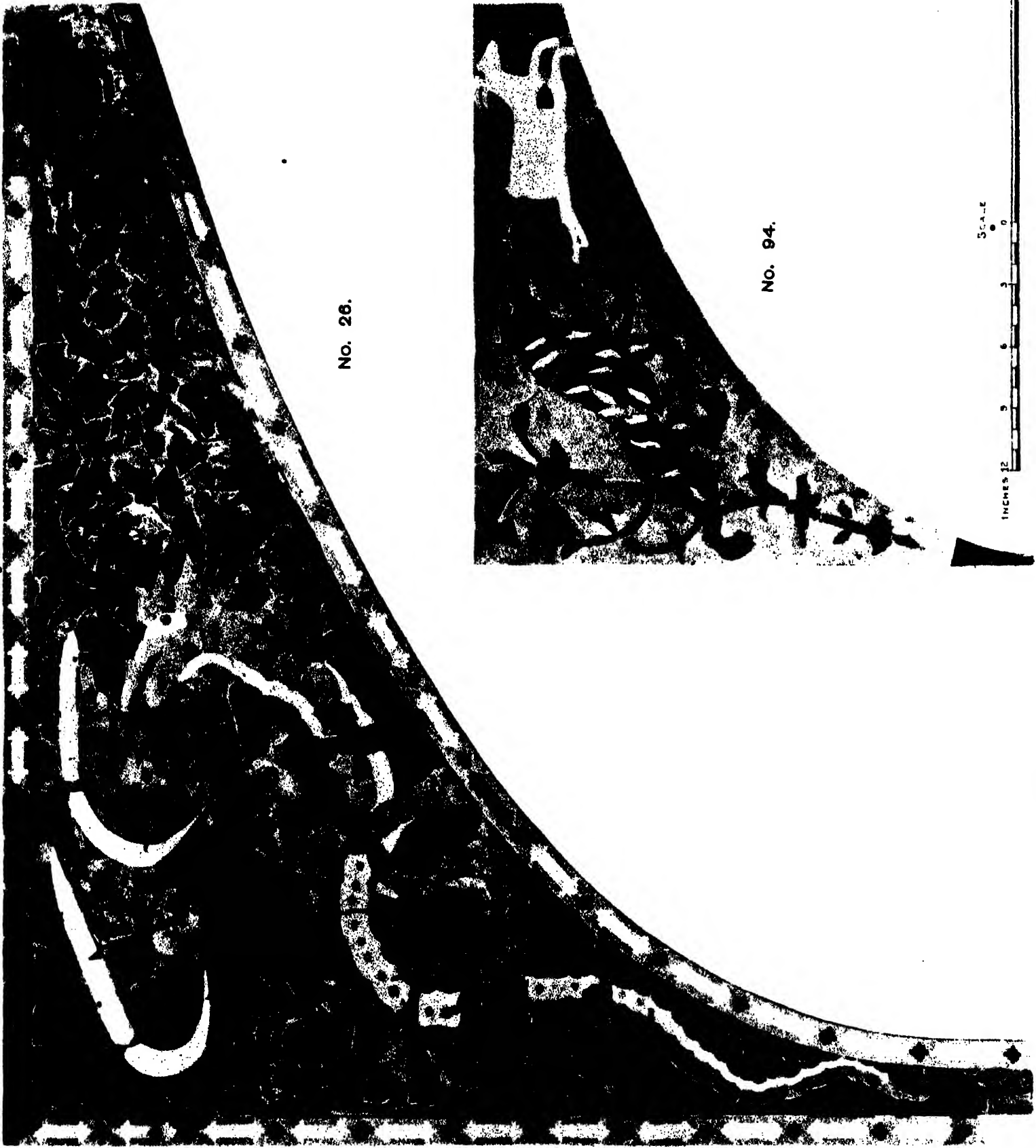
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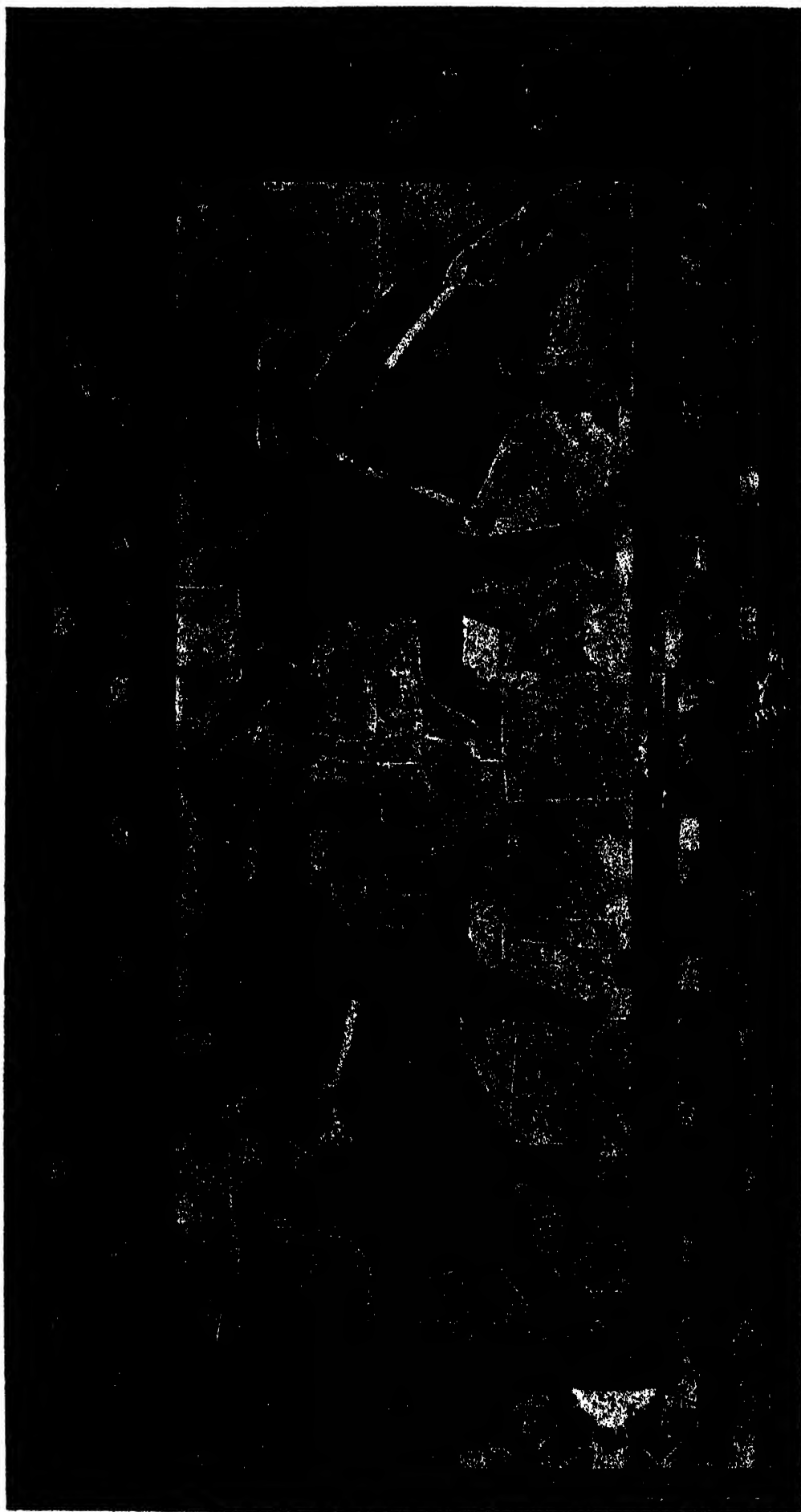
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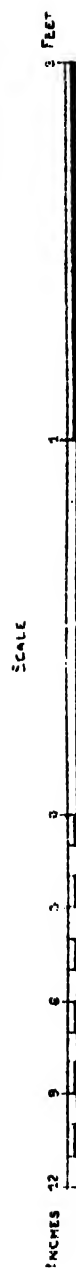






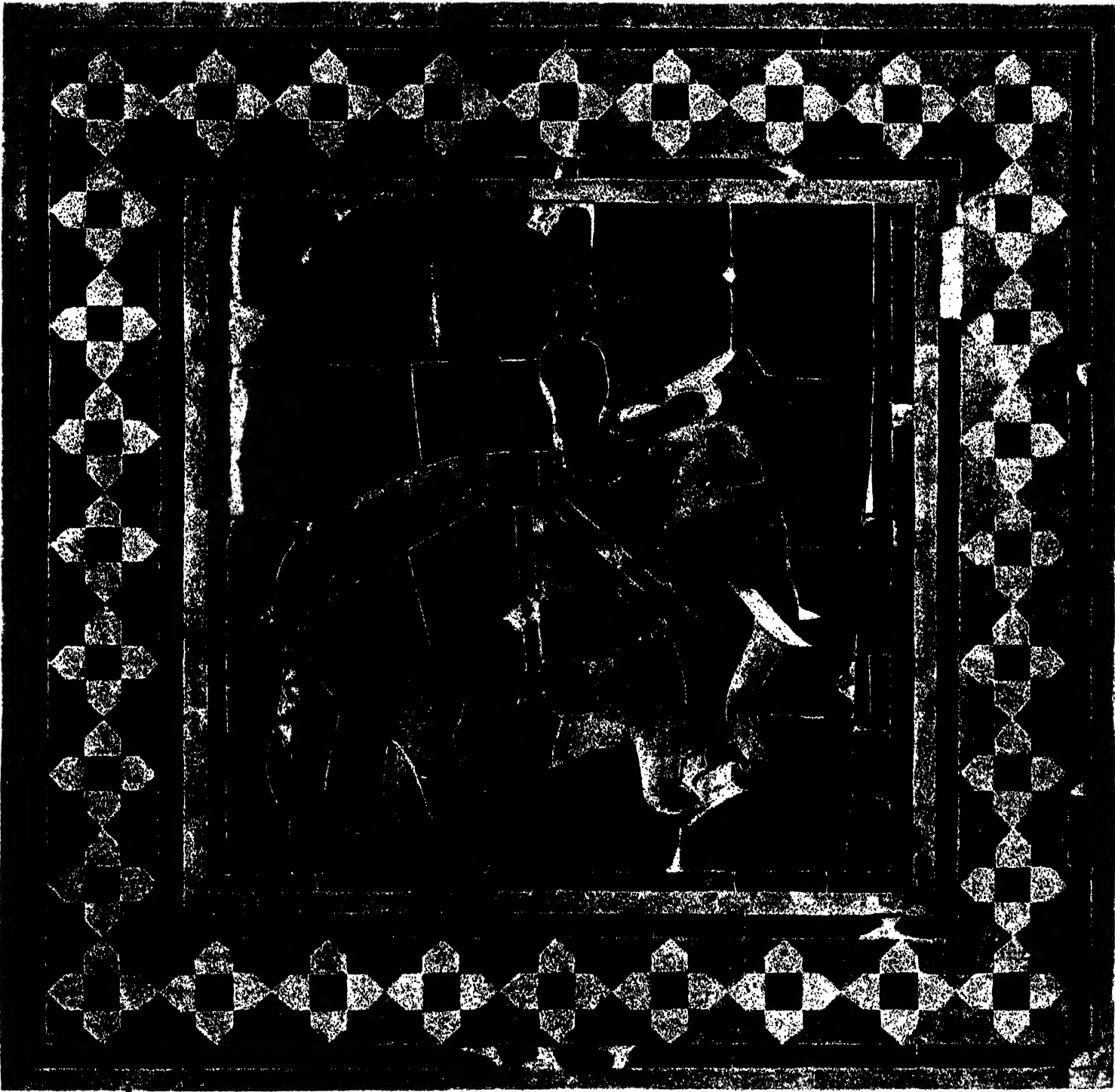


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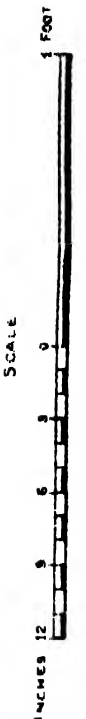




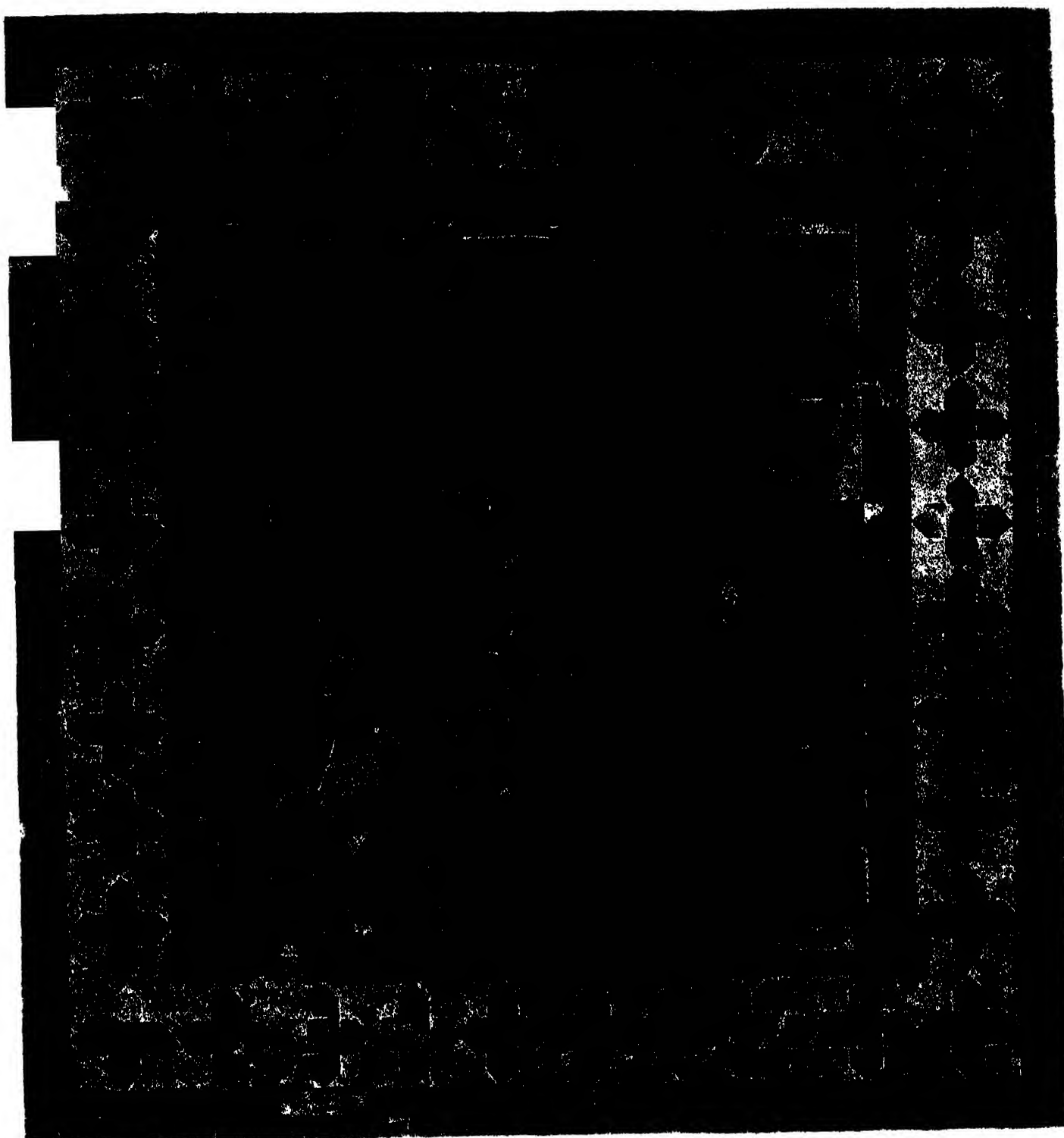


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[No 11]

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J. PH VOGEL, PH. D.

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#### **ERRATUM.**

We regret that in the April number, No. 114, a printer's error occurred on page 8. The line standing first on the page should have been printed as the last line of the page.





# The Journal of Indian Art and Industry.

## TILE-MOSAICS OF THE LAHORE FORT.

By J. PH. VOGEL, PH. D.

SUPERINTENDENT, ARCHÆOLOGICAL SURVEY, NORTHERN CIRCLE.

### III. THE PICTURED WALL OF LAHORE.

On the Hathi Pol or Elephant Gate we notice first of all the Persian inscription which records the construction of the Shah Burj (*alias* Saman Burj) by Shah Jehan in A.H. 1041 (A.D. 1631), as has been noticed above. It is painted over the gateway and consists of two lines, each of four hemistychs (*misra'*), as usual, enclosed within ornamental lines. The spandrels of the intrados are embellished with raised medallions of stone inlaid with an intricate scrollwork pattern.

The entire surface round the extrados was once brilliantly decorated with tilework divided into sunk panels in the usual fashion. But that in the right hand spandrel has quite, and that to the left has partially disappeared, leaving an enormous patch of common plaster. On each side are two panels, placed one over the other and enclosed by borders of scrollwork in which flowers are introduced. The lower panel displays a graceful group of flowers of four different kinds—lilies, narcissi and daffodils. The upper panel shows a vase placed on a flat dish and filled with various flowers including well-rendered blue irises.

The wall adjoining the Hathi Pol is a curtain wall; its length from the gate to the Saman Burj is 40 feet. Here we notice at once the remarkable unity of composition combined with a marvellous variety of design, which is one of the chief features of this unique wall decoration. Along the whole length of the palace wall there run two cornices at a height of 19 and 51 feet respectively from its foot. Each cornice is underlined by a broad band of uniform geometrical design. In the upper band the lines are dark blue (*lajvard*), forming a repeat of six-pointed stars, the centre of each being marked by a small star of yellow colour. The lower band exhibits a *svastika* design in lines of turquoise blue. In each case the blue main lines are laid between two edges of terra-cotta, the intervening spaces being filled with terra-cotta screens pierced with a checkered design. The upper cornice is surmounted by a solid parapet decorated with the usual crenelated (*kungurah*) border.

The two cornices enclose a double row of arched recesses adorned with frescoes which display tulips, poppies and other flowers dear to the heart of the Persian poets. Their fading colours contrast with the brightness of the tile-mosaics which fill the spandrels. The patterns are geometrical except in one case where we find white herons carrying fish (No. 22).

The arched recesses are of different widths, the narrower ones being divided into two by horizontal bands of tilework. In the middle of the lower recesses we notice projecting miniature balcony-windows (*bukharcha*) which add grace and variety to the decorated surface. They are continued along the whole length of the palace wall, but have suffered a great deal. In some cases they appear to have been mended with bits of blue-and-white Multani tiles, presumably by the Sikhs.

The upper recesses are all pierced in the centre with arched openings perhaps meant for loopholes. Between these recesses and the upper starry band there is a series of rectangular panels of tilework in alternating geometrical and floral patterns. These panels have been wantonly disfigured by being pierced with loopholes. Probably the Sikhs should be held responsible for this vandalism.

The Sikhs have left their stamp on this portion of the pictured wall also in the form of bullet marks. For these must date from the days when the Fort was twice bombarded, the first time in January 1841 on the accession of Sher Singh, who had to besiege Gulab Singh and his Dogras during five days, and again in September 1843 on the accession of Dilip Singh, when his minister Hira Singh captured it from the Sindhianvala Sirdars who had murdered both Sher Singh and Dhyani Singh. When reading Latif's spirited description<sup>1</sup> of this double bombardment, one wonders that anything of the Lahore Fort remained standing at all. That author relates that on the occasion of the first siege Sher Singh placed some forty marksmen (*mochis*) on the *minars* of the Imperial Mosque which at that time was used by the Khalsa as a powder magazine. "The *mochis* were paid at the rate of Rs. 10 to 20 each, and their commanding position enabled them to inflict considerable loss on the garrison

<sup>1</sup> Latif, *History of the Panjab* pp. 504 ff. Cf. Honigberger, *op. cit.* pp. 117 and 120.

inside the Fort, who were unable to reply effectually to their fire, since they commanded every corner of the palace with their weapons."

The bullet-marks of Sher Singh's *mochis* are particularly noticeable on the beautiful frieze of figured panels which run between the two rows of arched recesses just noted and consequently are placed at about half the height of the wall. They are continued on the west wall of the Saman Burj and constitute some of the best specimens of tilework, as exquisite in design as in colour. Dark blue elephants are most prominent, and the action of these massive beasts is ever expressed with singular vigour. How excellent is the elephant rushing after a fleeing horseman, its *m-thaut* leaning back and trying in vain to restrain its fury (No. 9). Several panels show scenes of the elephant fight which formed a chief recreation of the Moghul court. The first panel (No. 1) adjoining the Hatthi Pol shows such a scene on a white background. According to prevailing custom, each of the two elephants is mounted by two men, so that the second might at once take the *mahaut's* place if the latter—as often happened—was pulled down and trampled to death by the opposing animal.<sup>1</sup> The figure jumping between the two elephants probably tries to separate them by means of two cross-shaped cressets (*charkhi*) which were used to end the combat before either elephant was killed.<sup>2</sup> As to the men who could be more easily replaced, no such precaution seemed required.

On another panel (No. 7) distinguished by a dark-green background, the two elephants, each mounted by one driver, have just caught hold of each other.

The third panel with the well-drawn white horses is not less decorative, though the exact meaning of the scene depicted is by no means clear. Possibly the two figures in the centre represent wrestlers and the two horsemen umpires or onlookers. Abu-l-fazl<sup>3</sup> relates that at the court of Akbar there were "many Persian and Turani wrestlers and boxers, clever *Mals* from Gujrat, and many other kinds of fighting men. Their pay varies from 70 to 450 *dam*. Every day two well-matched men fight with each other. Many presents are made to them on such occasions." He mentions several by name.

In general, however, the horses do not display the same vigour and are wanting in spirit and in firmness of design (See Nos. 10 and 11). This will be obvious if we compare the elephant and the horse confronting each other on No. 12; the elephant full of action rushing forward with out-stretched trunk and the horse as tame and stiff as if it were made of wood. The horseman also swinging his spear lacks all expression of motion.

The dromedaries also displayed in some of the panels (Nos. 2, 4, 8, etc.) are but poor productions. They fail to render the characteristic shape and old-world look of the gaunt denizen of the desert. As spandrel decoration we find a dromedary with two men, preceded by a clumsy bird (No. 21).

The stately Bactrian camels, on the contrary, one mounted by a mace-bearer and the other led at leash (Nos. 23 and 32), which we notice in the same frieze on the Saman Burj, are very decorative. The animal with its grim mouth and woolly neck is excellently drawn. Less successful is the rider who sits rather stiffly in the saddle. The fighting bulls (No. 17) also are by no means lacking in spirit.

We have now reached the northern half of the west wall which forms part of the Saman Burj. It will be noticed that here the tilework has suffered a great deal more than on the curtain wall first described. This is evidently largely due to bad drainage, the water being allowed to flow down along the wall from the buildings above. At several places a broad grey streak along the whole height of the wall plainly marks the course of the drainage which, wherever it touched a panel of tilework, completely washed out all colour.

This portion of the west wall displays the harmony between the wall decoration and the position of the buildings above. It has five large arches of which the central one is placed exactly under the pierced marble screen of the Naulakha which occupies the centre of the Saman Burj. The five arches must originally have been open, but are now bricked up and provided with unsightly grated windows, the rooms behind being used for the storage of spirits. The spandrels over the large arches are splendidly decorated with winged figures in floating garments (Nos. 15, 24 and 31). These angels with their variegated wings spread out on both sides of the head are singularly suited for spandrel decoration and remind one of the winged figures on the triumphal arches of Imperial Rome. That they represent angels may be inferred from Moghul pictures where we find figures similarly robed administering to the wants of Ibrahim bin Adham, the royal dervish. In one instance (No. 24) the angel has captured a blue-coloured devil with horns and tail, his hands being tied together with a long rope. A dark-blue demon armed with club and buckler, yet of a more comic than dangerous appearance, may be seen in one of the smaller spandrels above (No. 25).

Another angel (No. 15) holds a fan and is surrounded by winged angel-heads with caps, which are also represented in some of the smaller spandrels, where one of them holds a rosary (Nos. 19 and 20). We may

<sup>1</sup> Bernier, *Voyages*, Vol. II, p. 68 (Constable's ed., p. 277).

<sup>2</sup> *Am-i-Akbari* (Blochmann) Vol. I, p. 127.

<sup>3</sup> *Ibidem* Vol. I, p. 258.

assume that there is some connection between these winged heads and the cherubs of Western art. The fan, or rather the sun-shade (Persian *sayaban* or *aftabgir*), is mentioned by Abul Fazl<sup>1</sup> among the ensigns of royalty. He describes it as being "of an oval form, a yard in length, and its handle, like that of an umbrella, is covered with brocade, and ornamented with precious stones."

The spandrel over the remaining arch (No. 26) deserves close examination. It is badly damaged<sup>2</sup> and the subject consequently not apparent at first sight. The white-spotted blue dragon is plainly visible. Over it we notice a pair of huge three-coloured wings, but it is obvious that these cannot belong to the dragon, as they are turned the wrong way. They must belong to some other animal, the body of which has entirely disappeared. This, I believe, can have been nothing but the fabulous bird Rukh which, as Sindbad the sailor tells us in the Arabian Nights, feeds on dragons. Near the dragon's head there is a confused mass of light green scrolls which I take to represent the bushy tail of the giant-bird. Its talons of the same green hue will be noticed on the back of the dragon. The snaky monster with its four feet helplessly hanging down has the exact appearance of being carried up through the air by the winged enemy at whom it seems to snap with its pointed snout.

Under the five large arches are elongated panels of which only two are partially preserved. One (No. 28) represents a procession: first an elephant carrying two men, a *mahaut* and a standard-bearer, then a group of foot soldiers with banners and matchlocks, followed by some horsemen of whom one makes a respectful *salam* to another riding in front of him, and finally a melancholy dog closing the train. The corresponding panel (No. 27) has lost nearly all colour, but the design can still be traced. It contains a group of elephants and dromedaries.

Over the arches are large rectangular panels embellished with rich geometrical mosaics. Among the smaller scenes depicted on this side of the Saman Burj we find several horsemen on prancing steeds—one (No. 34) attacking an elephant with his spear, another (No. 30) shooting arrows at a lion, clumsy and badly drawn, in whose throat and forehead two bolts are sticking.

The north-west face of the Saman Burj is the most perfect part of the pictured wall of Lahore. It is well preserved, except where injured by a drain on the left hand side, and contains three large arches of which the central one appears originally to have been an open window. The spandrels are gracefully decorated with a scroll pattern on a dark-blue background.

Beneath this arch there is one of the finest and most remarkable scenes: four horsemen playing polo (No. 38). The right hand side of this beautiful panel is badly injured, even the brickwork beneath the plaster having become exposed. But as it is symmetrical, we can restore the missing portion. The goals, marked by a pair of upright slabs, are shown on both sides. The birds flying over the horsemen are evidently purely decorative, like the flowers and the foliage shown all over the panel.

It is well-known that the noble game of polo or *changan*, as it is called in Persian, was not less popular in Muhammadan India than in other parts of Asia. Qutb-ud-Din Aibak, one of the earliest Moslim rulers of Hindustan was killed while playing polo at Lahore (A.D. 1210). It is also mentioned in the days of Sikandar Lodi.

Akbar is said to have been particularly fond of this game and to have even played it at night with fire balls. Abul-fazl<sup>3</sup> gives an account of the game as it was played in those days, but winds up by saying: "It is impossible to describe the excellency of this game. Ignorant as I am, I can say but little about it."

Even the effeminate Muhammad Shah is said in his youth to have been fond of hunting and of the sport now known as polo.<sup>4</sup>

Under the two side-arches we find two oblong panels (No. 39), identical in design, representing a spirited group of four camels of which the two in the centre are engaged in a fierce fight, while the two others are led by attendants. This camel-fight, as will be shown beneath, is also to be classed among the entertainments of the Moghul Court.<sup>5</sup>

The spandrels (Nos. 40 and 42) contain angel figures not less magnificent than those on the west wall; but here each is carrying a fan and a lamb, while a horned demon head is shown over the key of the arch. The remaining space is filled with "Chinese" clouds, such as are also found in the *pietra-dura* decoration of the Moghul palaces.

Over the arches are large rectangular panels with graceful scrolls in turquoise blue and white alternating with crimson and white flowers. Among the smaller panels we notice two yellow lions chasing deer (Nos. 41 and 43), mounted elephants (Nos. 44 and 45) and prancing horses (No. 36). On one (No. 37) two combatants are seen armed with sword and shield. Such gladiators (Persian *shamsher-baz*) are duly noticed by Abul-fazl<sup>6</sup> among the servants of the Court.

<sup>1</sup> *Ain-i-Akbari* (Blochmann) p. 60; plate IX, fig. 3.

<sup>2</sup> *Ain-i-Akbari* (transl. Blochmann) p. 143.

<sup>3</sup> Latif, *History of the Panjab*, p. 219.

<sup>4</sup> *Ain-i-Akbari* (transl. Blochmann) p. 143.

<sup>5</sup> *Ibidem* p. 252.

We now reach the north wall of the Saman Burj which supports the back wall of the Shish Mahall or Palace of Mirrors. Owing to the action of the water flowing down from the gutters above, the decoration on this side of the wall has suffered irreparable damage. The large arch in the centre has been bricked up and the tile-mosaics have entirely disappeared. In the spandrels they consisted evidently of scrollwork, while the oblong panel beneath, though void of all colour, still retains its design plainly marked in the plaster: a row of seven flower-vases of various shapes alternating with flower-stalks.

On a line with this panel we have two long panels, one (No. 47) showing an elephant-fight in which the elephants, each mounted by one *mahaut*, are evidently being urged on by footmen armed with *charkhis*. The other (No. 46) shows some men leading two antelopes at leash. Bernier<sup>1</sup> mentions tame antelopes among the animals which took part in the daily review before the Hall of Public Audience. He says that they were also made to fight each other, and that Shah Jehan used still to amuse himself with this kind of sport in his old age when he was kept a prisoner in the Agar Fort. It is related of Jehangir that he had a pet antelope called Raj, and that after its death, which took place in the second year of his reign, the Emperor ordered a monument to be raised over its remains with a life-size statue of the animal and a stone slab bearing the following inscription in Persian: "In this delightful spot an antelope was caught by the Emperor Nur-ud-din Muhammad Jehangir, which, in the space of a month, became entirely tame and was considered the best of all the royal antelopes."<sup>2</sup>

On this side of the Saman Burj should also be noticed eight panels, each containing two standing figures, evidently satellites of the Imperial Court. In one of these panels (No. 48) the first man holds a fly-whisk, which from early times has been considered an emblem of royalty in India.<sup>3</sup> The other carries a curved sword in a scabbard. The two figures in green robes (No. 49) must represent Maulawis. Each of them holds a tablet with an Arabic text. One reads: *الله بآق* "God is sufficient" and the other *الله عظيم* "God is great and victorious." On a third panel (No. 50) two servants carry a vase of flowers and a dish of pomegranates.

The north-east face of the Saman Burj corresponds to that on the north-west, and is decorated with mosaics of the same pattern. We notice, however, that the arched recess in the centre is painted and, therefore, must have been originally closed. It is now provided with a modern window secured by means of iron bars and nettings. Instead of the elephants on the north-east wall we have here two men blowing trumpets (No. 51). These are probably the instruments which used to be played in the Naqar Khanah and of which Bernier<sup>4</sup> gives the following description.—

"C'est le lieu où sont les Trompettes, ou plutôt les Hautbois et les Tymbales qui jouent ensemble de concert à certaines heures du jour et de la nuit; mais c'est un concert bien étrange aux oreilles d'un Européen nouveau venu qui n'y est pas encore accoutumé, car il y a quelquefois dix ou douze de ces Hautbois, et autant de Tymbales, qui donnent tout d'un coup, et il y a tel Hautbois, celui qu'on appelle Karna, qui est long d'une brasse et demi, et qui n'a pas moins d'un pied d'ouverture par le bas, comme il y a des Tymbales de cuivre ou de fer, qui n'ont pas moins d'une brasse de diamètre; jugez delà du tintamare que cela doit faire; en vérité cette Musique dans le commencement me pénétrait et m'étonnoit tellement qu'elle m'étoit insupportable; néanmoins, je ne sais ce que ne fait point l'accoutumance; il y a déjà longtemps que je la trouve très-agréable, et la nuit principalement que je l'entens de loin dans mon lit de dessus ma terrasse, elle me semble avoir quelque chose de grave, de Majestueux, et de fort mélodieux."

From this point we start our review of the long wall which forms the north side of the palace. It is divided by four projecting octagonal towers, of which the two larger are placed at the corners of the square called Khil'at Khanah, whilst the two smaller occupy the corners of Jehangir's Quadrangle and form part of the buildings ascribed to that Emperor. On the map of the Sikh period the two large towers are called Kala Burj and Lal Burj, i.e. the Black and the Red Tower.

It will be seen that in general the tile-mosaics on the north wall of the palace are in a far less satisfactory state of preservation than those on the west wall. The portion between the Saman Burj and the first octagonal turret has five large arches, the spandrels of which—except the central one—are decorated again with winged figures (Nos. 55 and 58) of the same type as those found on the Saman Burj. Here also is a panel with two standing figures (No. 52), of which the first waves a handkerchief, whilst the second holds a large non-descript object resembling a quiver under his right arm.

On the upper portion of the wall we notice some rectangular panels with similar figures of imperial footmen, but here each panel contains only a single figure. The objects they carry are, in one instance, a well-drawn candle-stick (No. 53) and in the other a vase of flowers (No. 54). It will be seen that such single-figured panels

<sup>1</sup> Bernier, *Voyages* Vol. I. p. 220 and II p. 42. Constable's edition pp. 106 and 262.

<sup>2</sup> Elliot, *History of India* Vol. II pp. 302 f. Latif, *Lahore*, p. 45.

<sup>3</sup> The word *chauri* (vulgo *chaurie*) is derived from Sanskrit *chamara* which is a derivation from *chamara* meaning "a yak" (*bos grunniens*). The fly-whisk is made of the tail of this animal.

<sup>4</sup> Bernier, *Voyages* Vol. II, pp. 38 f. Constable's edition p. 200. Cf. *Ain-i-Akbari* (Blochmann) pp. 50 f. and pp. 611 f.



occur all along the north wall.

The figure with the candle-stick is of unusual interest, because it reminds us of a passage in the *Ain-i-Akbari*<sup>1</sup> which occurs in the chapter "On Illuminations."

"Every afternoon, one *ghari* before sunset, his Majesty, if on horseback, alights, or if sleeping, he is awakened. He then lays aside the splendour of royalty, and brings his external appearance in harmony with his heart. And when the sun sets, the attendants light twelve white candles, on twelve candle-sticks of gold and silver, and bring them before his Majesty, when a singer of sweet melodies, with a candle in his hand, sings a variety of delightful airs to the praise of God, beginning and concluding with a prayer for the continuance of this auspicious reign. His Majesty attaches the utmost importance to praise and prayer, and earnestly asks God for renewed light."

Now the "singer of sweet melodies with a candle in his hand," as shown on the picture illustrating this scene in Blochmann's translation (plate VI), closely resembles the candle-bearer on the Fort wall.

Other subjects treated here with great ability are richly caparisoned horses, either led by a groom or mounted by a horseman sword in hand, who is preceded by a forerunner carrying a triangular banner (Nos. 56 and 59). Or we find an elephant with lifted trunk on which two men are seated—a *mahaut* armed with his crook and a standard-bearer perched on the hind-quarters of the animal, while a footman with a *charkhi* walks in front (No. 57). These scenes remind us of Bernier's<sup>2</sup> description of the review which daily took place before the Emperor when he sat in state in the Public Audience Hall:—

"Pendant une heure et demie ou environ que dure cette Assemblée, le Roy se divertit à voir passer devant soy un certain nombre des plus beaux chevaux de ses Escuries, pour savoir s'ils sont bien traités et en bon estat. Il fait le mesme d'un certain nombre d'Elefans qu'il fait aussi passer devant soy; leur sale et vilain corps est alors bien lavé et bien net, et peint en noir comme de l'encre, hormis qu'ils ont deux grosses rayes de peinture rouge qui du haut de la teste leur descendent vers la Trompe où elles se joignent: Ces Elefans ont aussi pour lors quelque belle couverture en broderie avec deux clochettes d'argent qui leur pendent des deux côtez, attachées aux deux bouts d'une grosse chaîne d'argent qui leur passe par dessus le dos; de certaines queues de vaches du grand Tibet blanches et fort cheres qui leur pendent aux oreilles comme de grandes moustaches; et deux petits Elefans bien parez se tiennent à leurs côtez comme s'ils étoient leurs Esclaves et destinez pour les servir. Ces grands Colosses, comme s'ils étoient glorieux de se voir ainsi magnifiquement ornez et accompagnez marchent gravement, et lors qu'ils sont arrivez devant le Roy, le Conducteur qui est assis sur leurs épaules avec un crochet de fer à la main, les picque, les talonne, leur parle, et leur fait incliner un genou, lever la trompe en l'air, et faire une espece de hurlement, que le peuple prend pour un Taslim ou Salut bien censé."

The wall surface between the first and second octagonal tower—the Kala Burj and Lal Burj—is almost void of colour decoration, and whatever traces of it may have remained, are now concealed under modern plaster. Under the lower cornice, however, we notice some square panels, in which segments of dark-blue and yellow have been inlaid in a raised terra-cotta frame of geometrical design. It is noteworthy that such mosaics in relief, reminding one of the old Multan tilework, are only found on the north wall of the Lahore Fort. The only figured panels are four spandrels, each containing a pair of blue cranes flying (No. 61) beneath the lower cornice, and above it some small spandrels with angels, cherubs and lions (Nos. 62, 63 and 64). It is surprising to find in a similar panel (No. 60) a bird which can be nothing but an ostrich. Jehangir's interest in strange animals may perhaps account for the occurrence of this long-legged denizen of South Africa on the wall of the Lahore Fort. On the top of this portion of the Fort wall we find a curious parapet of brickwork placed on both sides of the small marble pavilion and retaining remnants of tile decoration.

The second octagonal tower, the Lal Burj, which terminates this part of the wall was evidently once decorated with tiled panels up to the eaves. In the central portion there is one panel in which we can still distinguish a turquoise-coloured *mahaut* seated on the neck of a dark-blue elephant. Under the upper band there appears to have been a row of standing figures. Over the upper band the decoration consists of geometrical squares in relief of the type just described, alternating with pierced terra-cotta screens. It will be noticed that the top portion of the tower over the eaves is a modern addition.

Beyond this tower the lower portion of the wall is partly masked by the brick structure called 'Arz-gah which, as we have seen, is built right under the Chhoti Khwabgah. On this part of the wall not a trace of colour decoration now remains, except the two horizontal bands, of which the lower one is partially hidden by the 'Arz-gah.

We have now reached the last part of the pictured wall corresponding to the Quadrangle of Jehangir above and flanked by two slim octagonal towers partly engaged in the wall. Here again we have occasion to observe the perfect harmony between the wall decoration and the position of the buildings above. The edifice occupying the centre of the river front of Jehangir's Quadrangle is the Bari Khwabgah. The wall surface beneath has five large arched panels, the spandrels of which are adorned with well-preserved faience mosaics. Those over the

<sup>1</sup> *Ain-i-Akbari* (Blochmann) Vol. I, p. 48.

<sup>2</sup> *Voyages* Vol. II pp. 41 ff. Constable's edition pp. 201 f.

central arch each display a magnificent dark-blue dragon pursuing a white and blue goat (No. 92). The movement of the serpent-shaped monster is well-expressed. Its legs are provided with little wings.

There may have been a special purpose in giving the dragon such a prominent place under the Imperial Bed-chamber. This may be inferred from Bernier's description of the insignia<sup>1</sup>:

"Devant eux [les Manseb-dars] marche pompeusement ce qu'on appelle le Kours; ce sont plusieurs figures d'argent, portées sur le bout de certains gros bâtons d'argent fort beaux et fort bien travaillés; dont il y en a deux qui représentent deux grands poissons; deux autres qui représentent un Animal fantastique d'horrible figure qu'ils appellent Eiedeha; d'autres qui représentent deux Lions, d'autres deux Mains, d'autres des Balances, et ainsi je ne sais combien d'autres figures dont ils font leurs Mystères."

The word *eiedeha* exactly renders the Indian pronunciation of the Persian *azhdahah* ("a dragon")—a compound, of which the first member is derived from Zend *azhi* corresponding to Sanskrit *ahi*. The dragon appears, therefore, to have been known in Iran in a very remote age and its occurrence in Gandhara sculptures is probably due to Iranian influence. Usually we associate this animal with China, and it is quite possible that the dragon under Jehangir's bed-room is a direct descendant of the imperial dragon of Pekin.

The spandrels over the two adjoining arches are decorated with angels on both sides similar in design, but executed in different colours (No. 89). Each angel is preceded by a flying bird and holds a flask and a cup. Whether this flask is supposed to contain sweet sherbet or some beverage of a stronger sort, it is impossible to decide. But we notice that the flask is badly drawn and that in general this cup-bearing angel of clumsy appearance is very inferior to the truly angelic forms which adorn the walls of the Saman Burj.

The spandrels of the remaining two arched panels (No. 91) exhibit a floral design which is reproduced here on account of the excellence of its colouring.

Under the dragons there are two rectangular panels (No. 101) each with a standing figure of a satellite carrying a fly-whisk and a handkerchief (Persian *rumat*).

The remaining portion of the wall is divided into larger and smaller recessed panels, arched or rectangular, on which but little colour is left. We may assume that the north wall also originally bore fresco decoration in addition to the tilework, but no trace of it now remains. Among the faience mosaics we find small spandrels with cherubs (Nos. 86 and 90) or various animals—elephants, horses, lions, pheasants (?) and herons (Nos. 97—100) and rectangular panels with richly caparisoned elephants (Nos. 83 and 84), clearly delineated but unfortunately considerably injured. One (No. 75) is mounted by a *mahaut* making a *salam*. Another panel, showing an antelope (black buck) led at leash by a man, has also suffered a great deal (No. 88). We have noted the same subject on the Saman Burj (No. 46).

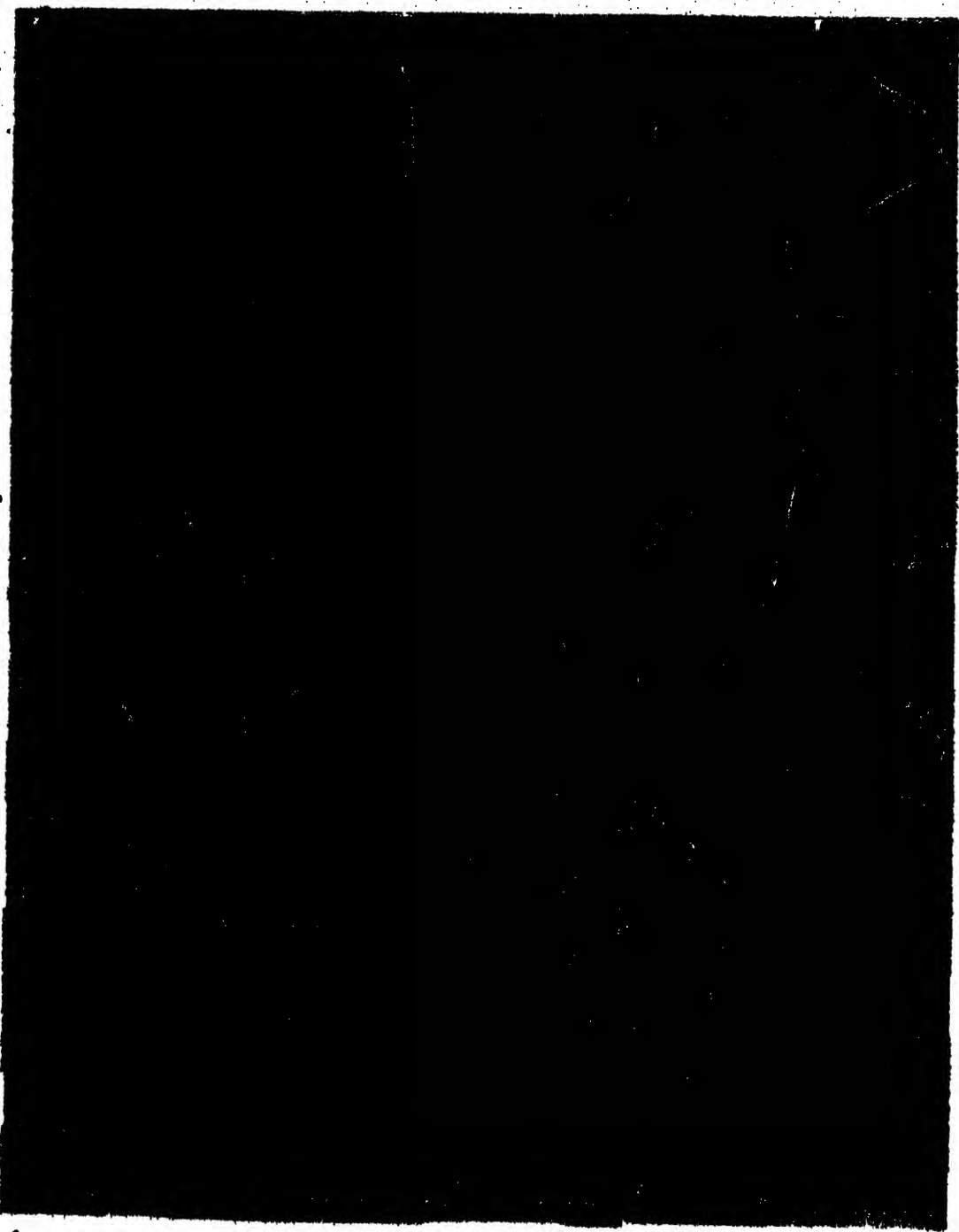
Some of the larger arched recesses contain rectangular sunk panels, in which we find standing figures of imperial attendants of the same type as noticed on other parts of the wall. One of them is a soldier clad in the ample robe of the Moghul period and carrying a match-lock (No. 74). In another (No. 78) we may perhaps recognize a Farangi—i.e. a European soldier—in the service of the Great-Moghul, on account of his peculiar costume: a short jacket, wide trousers and a hat with feather. There are two more such figures (Nos. 76 and 77) which are distinguished by a peculiar dress probably meant to indicate a distinct nationality; but I am unable to identify them.

Adjoining the western tower there is a panel (No. 73) which deserves special notice on account of its uncommon subject. It represents the goat and monkey man, a figure familiar to any one who has lived in India. It is true that the monkey, partly owing to his costume and partly to his colour, is difficult to recognize, but his companion, the goat, being balanced by his master on a series of green spool-shaped supports, is so briskly and naturally drawn as to explain the well-known scene at once. It is not a little curious to find thus a popular element introduced into this truly imperial art.

To complete our review, we must call attention to the slim octagonal turrets placed at the ends of Jehangir's Quadrangle. The one on the west side is half engaged in the wall and that to the east for one quarter. The latter affords consequently more space for decoration. The rectangular panels with standing figures (Nos. 104 and 105) found on and adjoining the eastern tower are of the same kind as have already been described. So are the geometrical relief-panels on the lower portion of the wall. Beneath the upper decorative band both towers are corbelled out, and it is here that we find a series of roughly quadrant-shaped panels, containing seated figures alternately turned to the right and to the left. The western turret has eight such panels (Nos. 65—72) and the eastern one ten<sup>2</sup> (Nos. 108—116). Of these ten, one has been left unreproduced, as it is identical with the *hukka* smoker (No. 113). On the whole, these seated figures are very uniform and only a few have any individuality, such as the baker (No. 114), the writer (No. 115) and the drummer (Nos. 116). Particularly interesting are the two cup-bearers (Nos. 69 and 71), as they remind us of the curious coin on which Jehangir stoutly struck his own effigy holding in his right hand the forbidden cup.

<sup>1</sup> *Foyages* Vol. II. p. 40. Constat's edition pp. 206 f.

<sup>2</sup> There appears to have been one more which is now entirely covered with plaster.

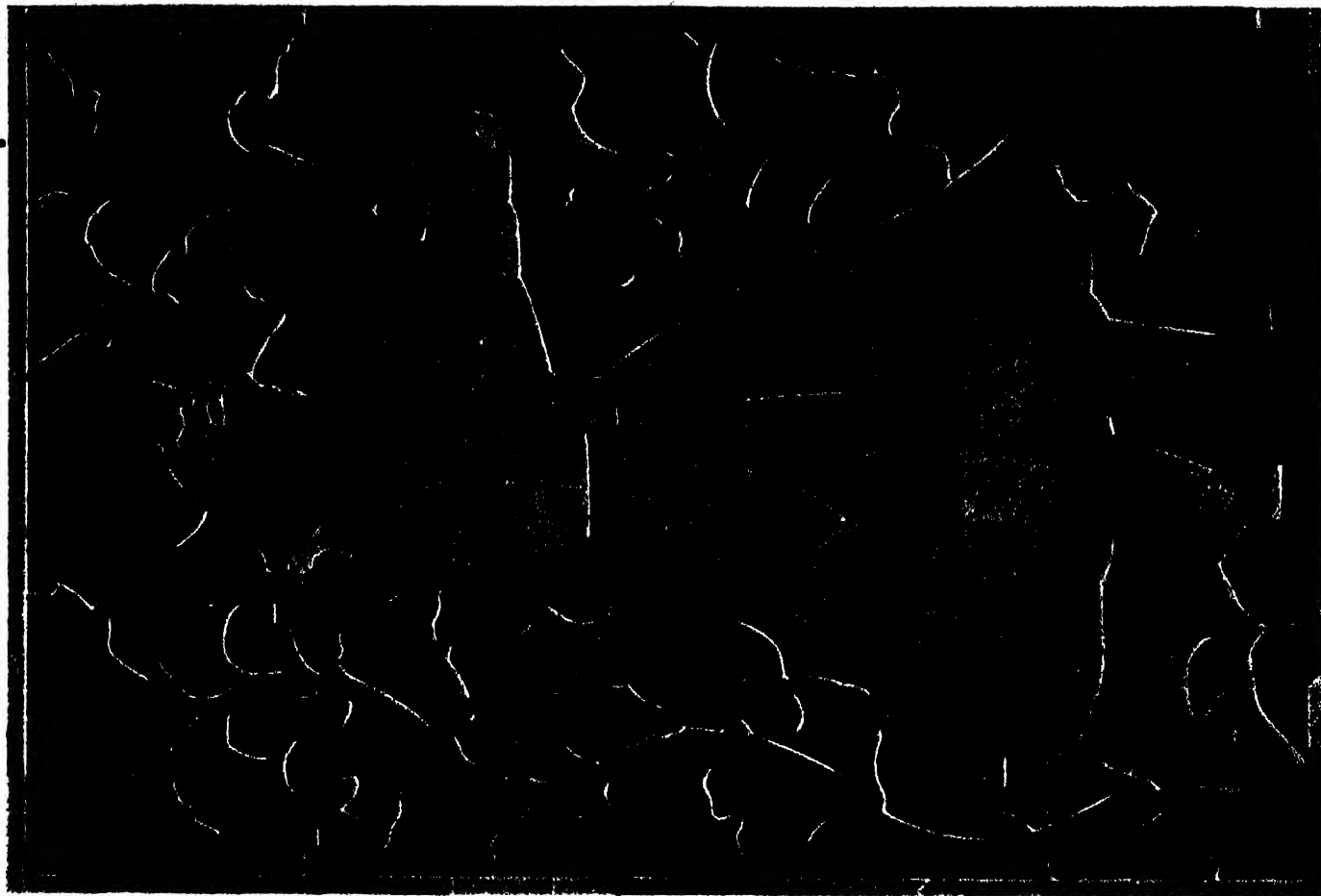


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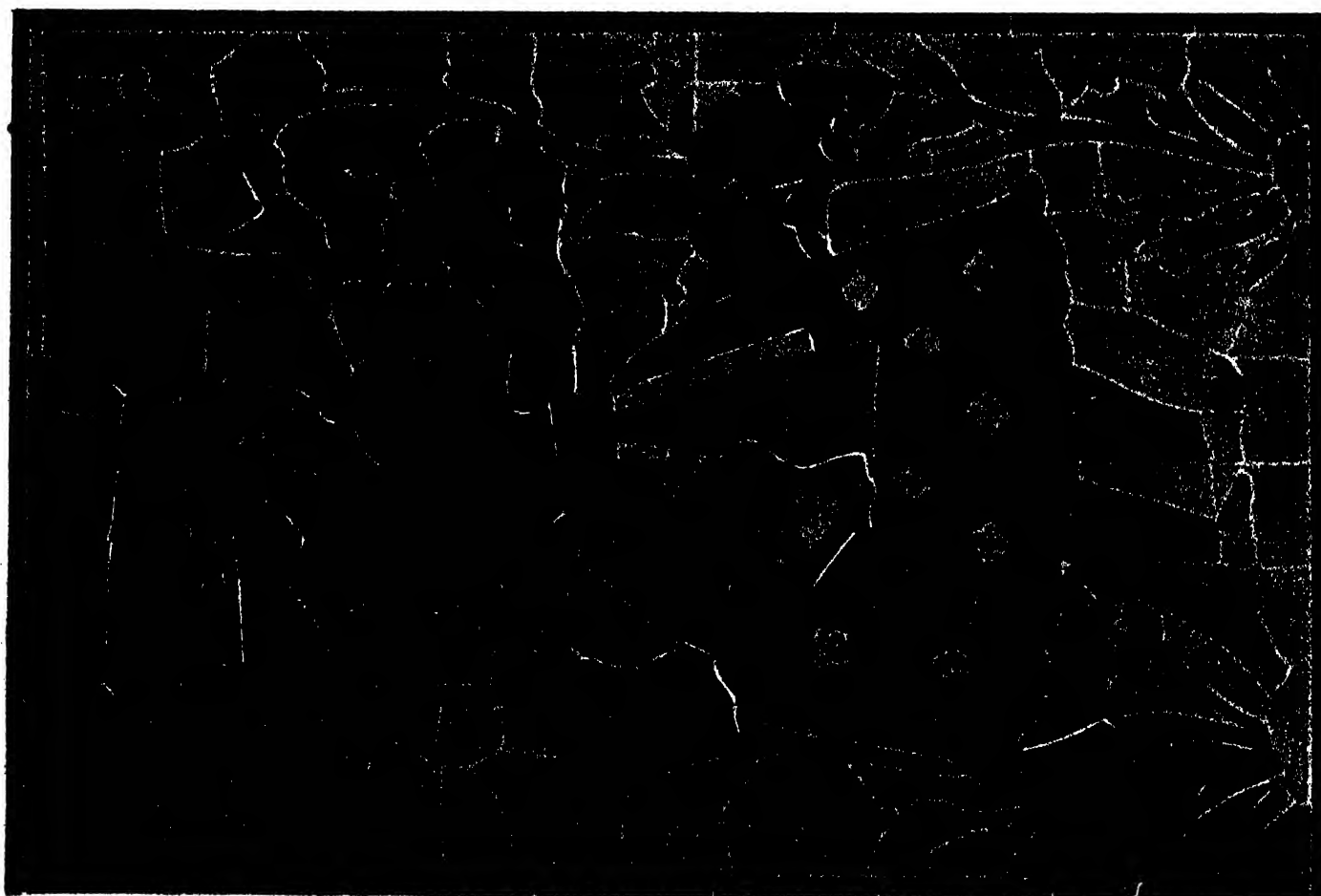




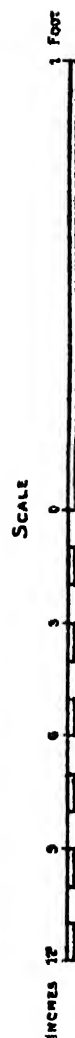




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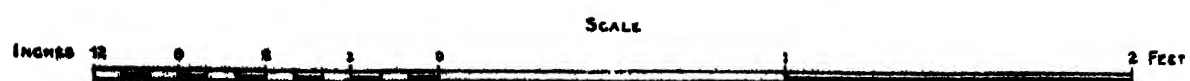
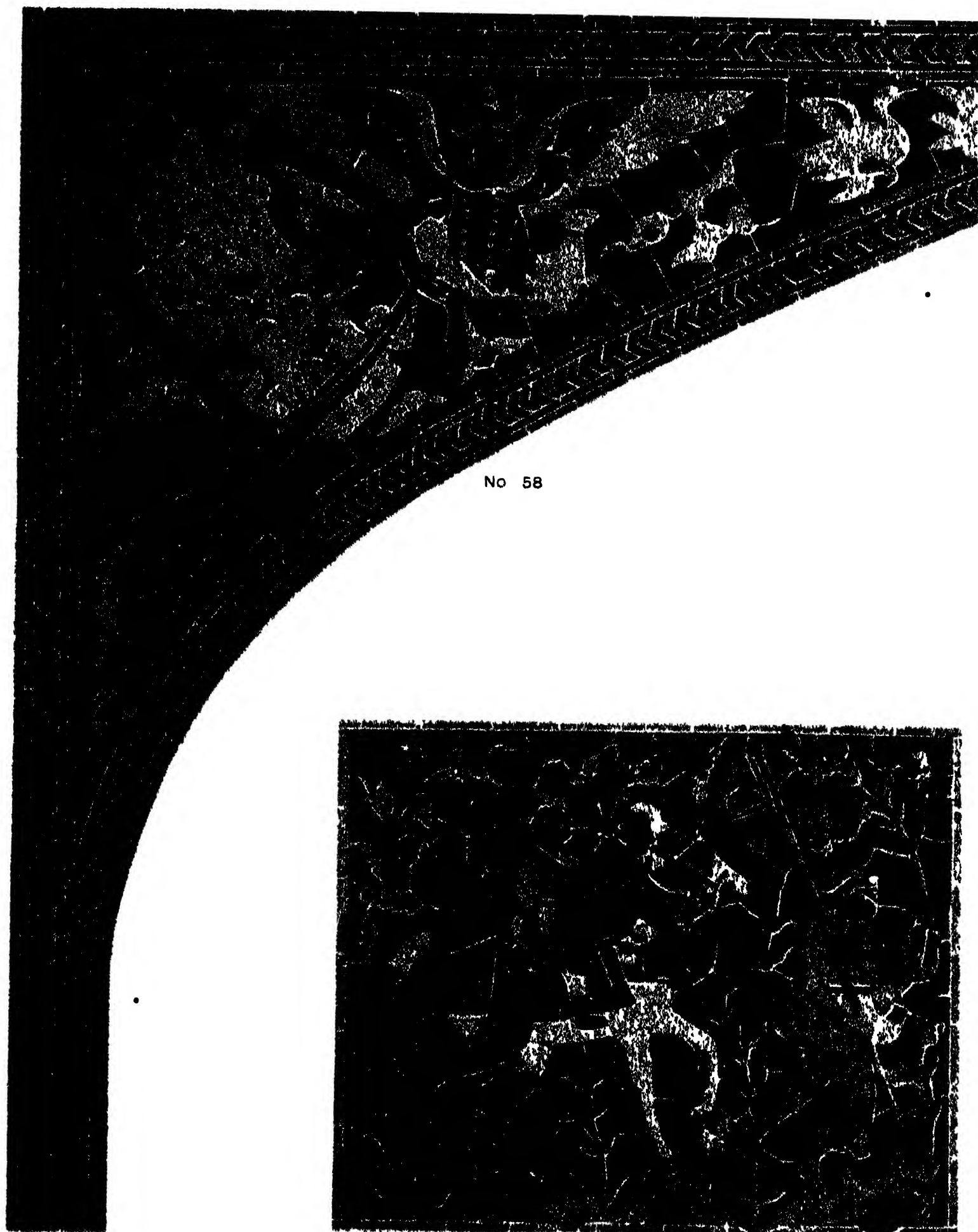






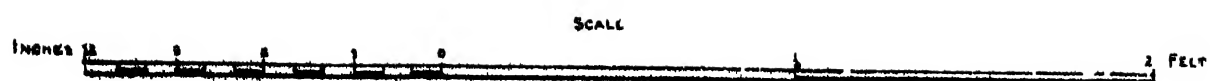
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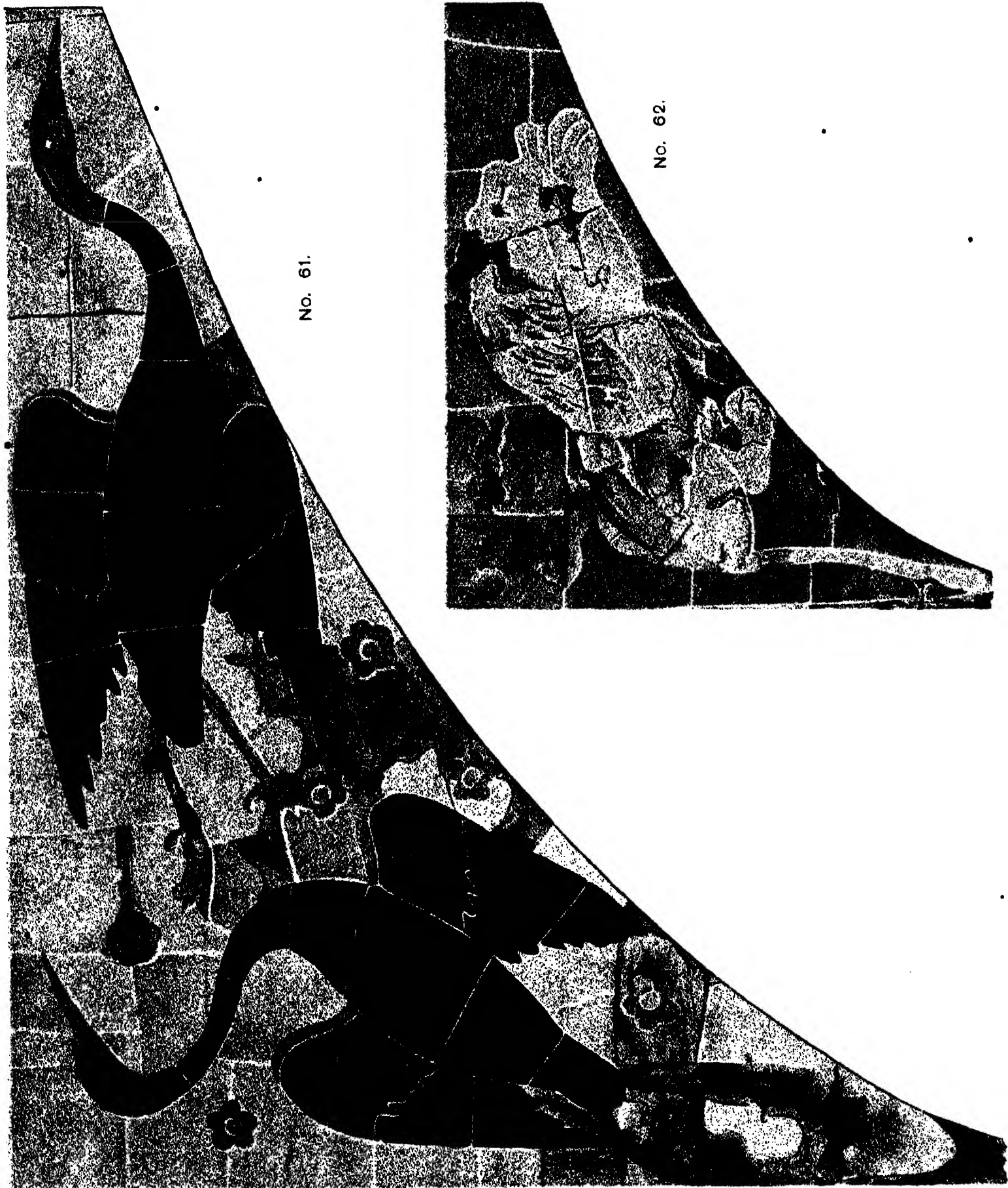
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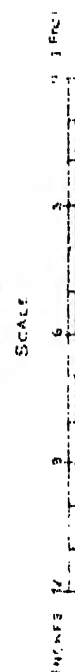






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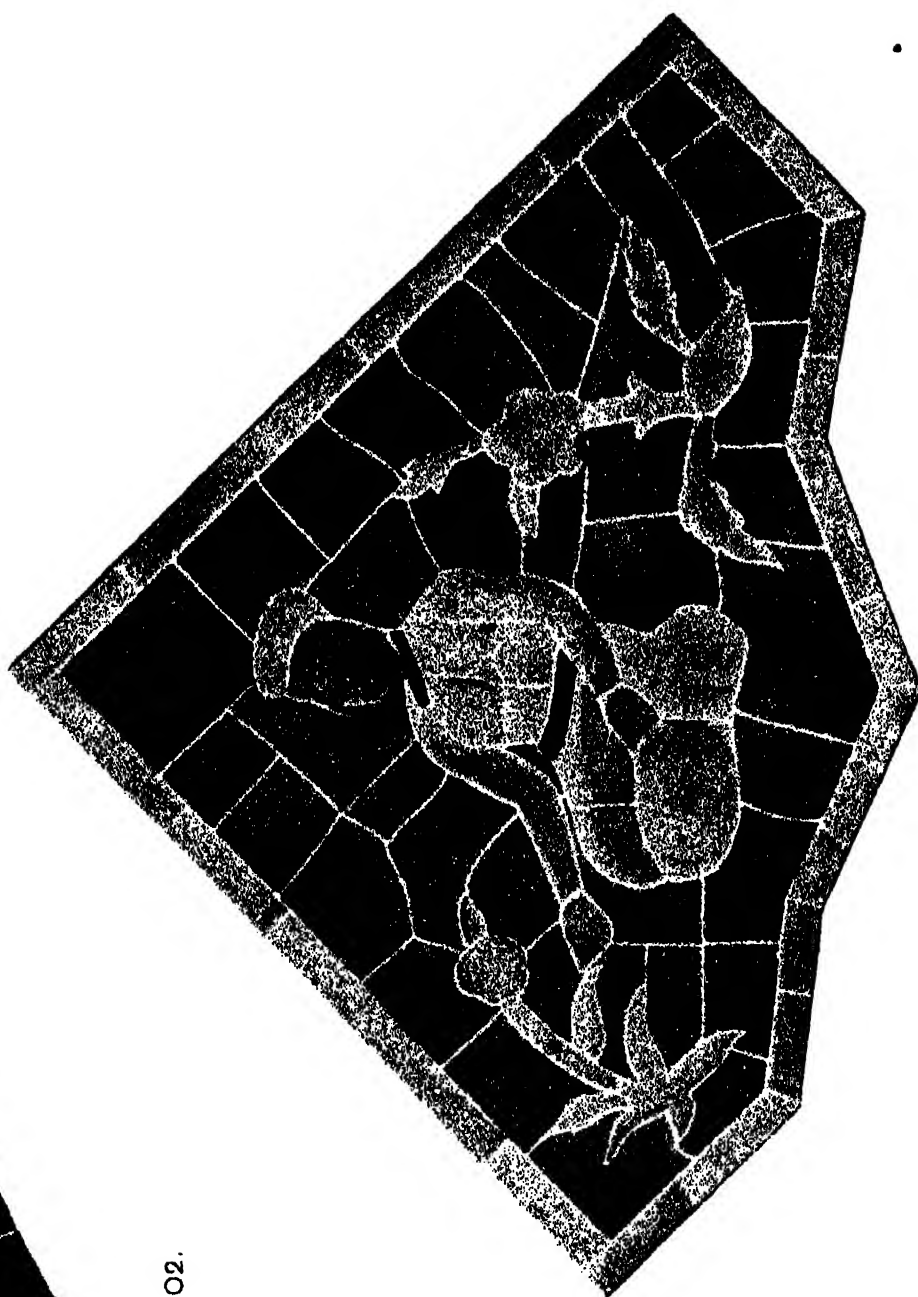
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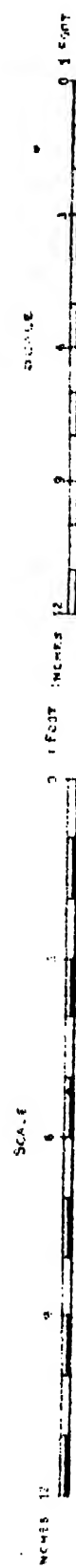




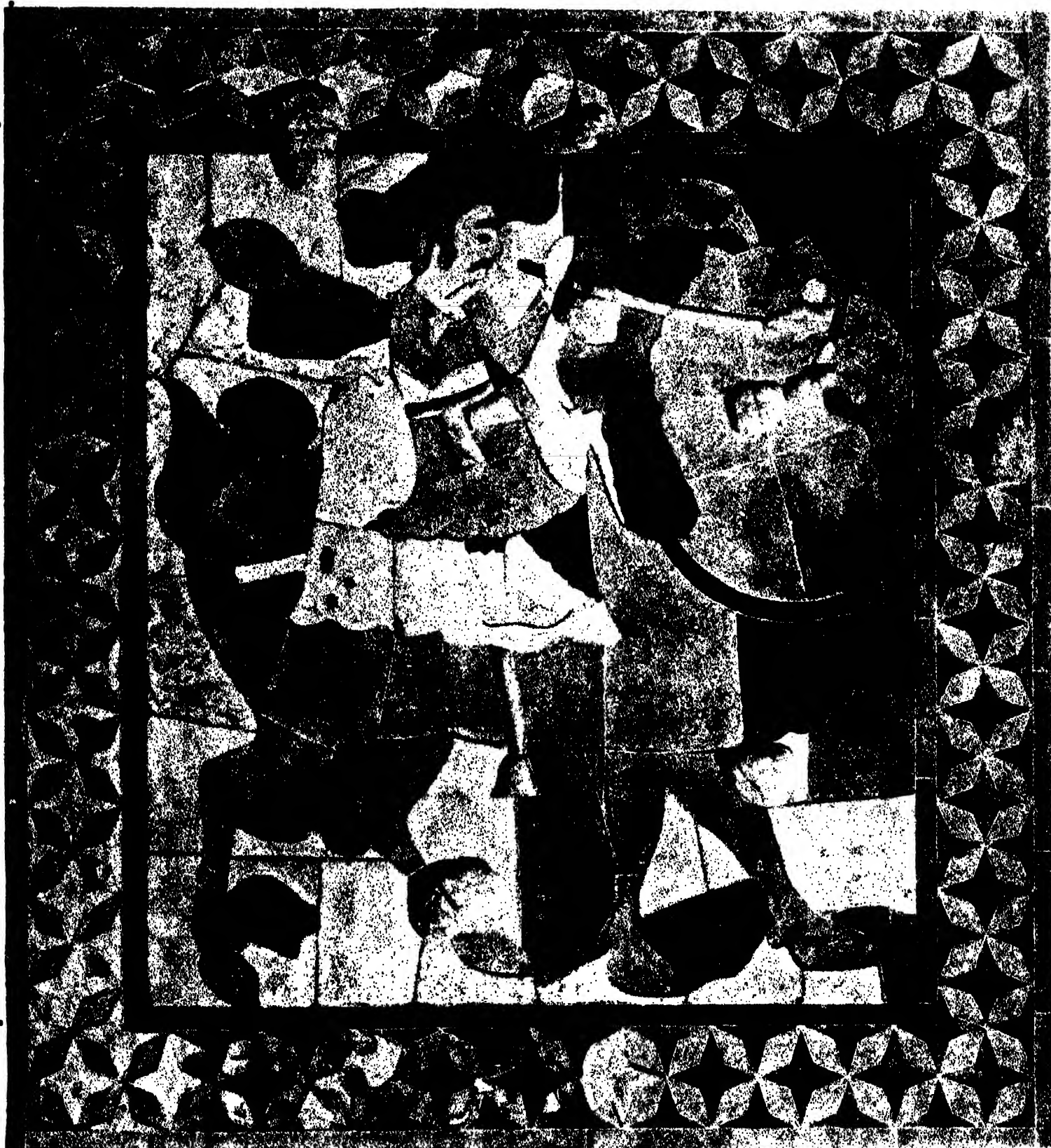
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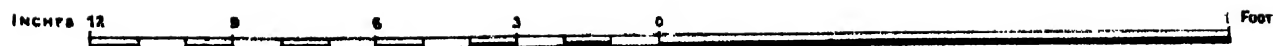






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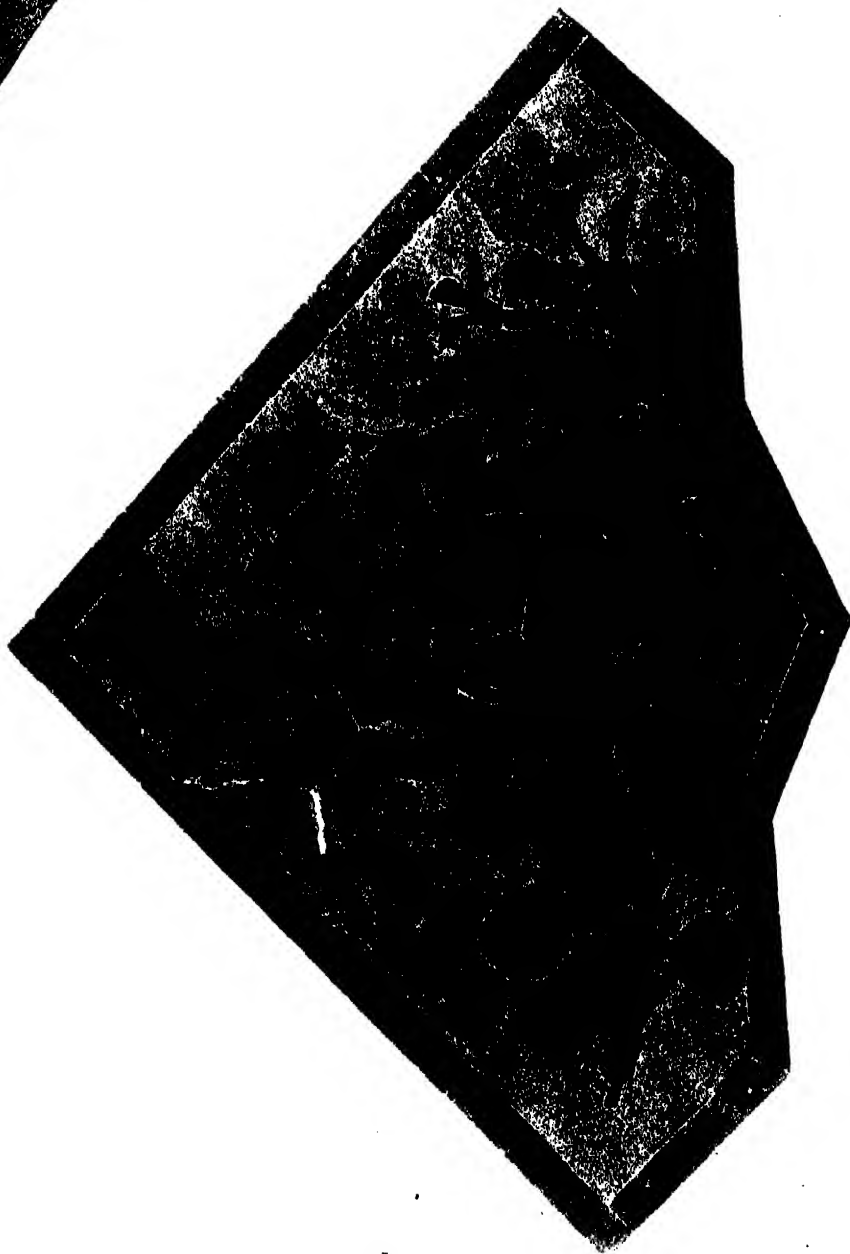
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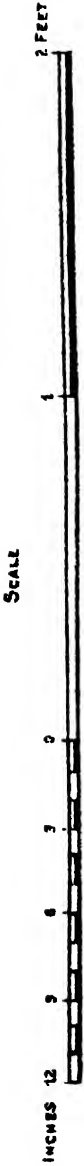
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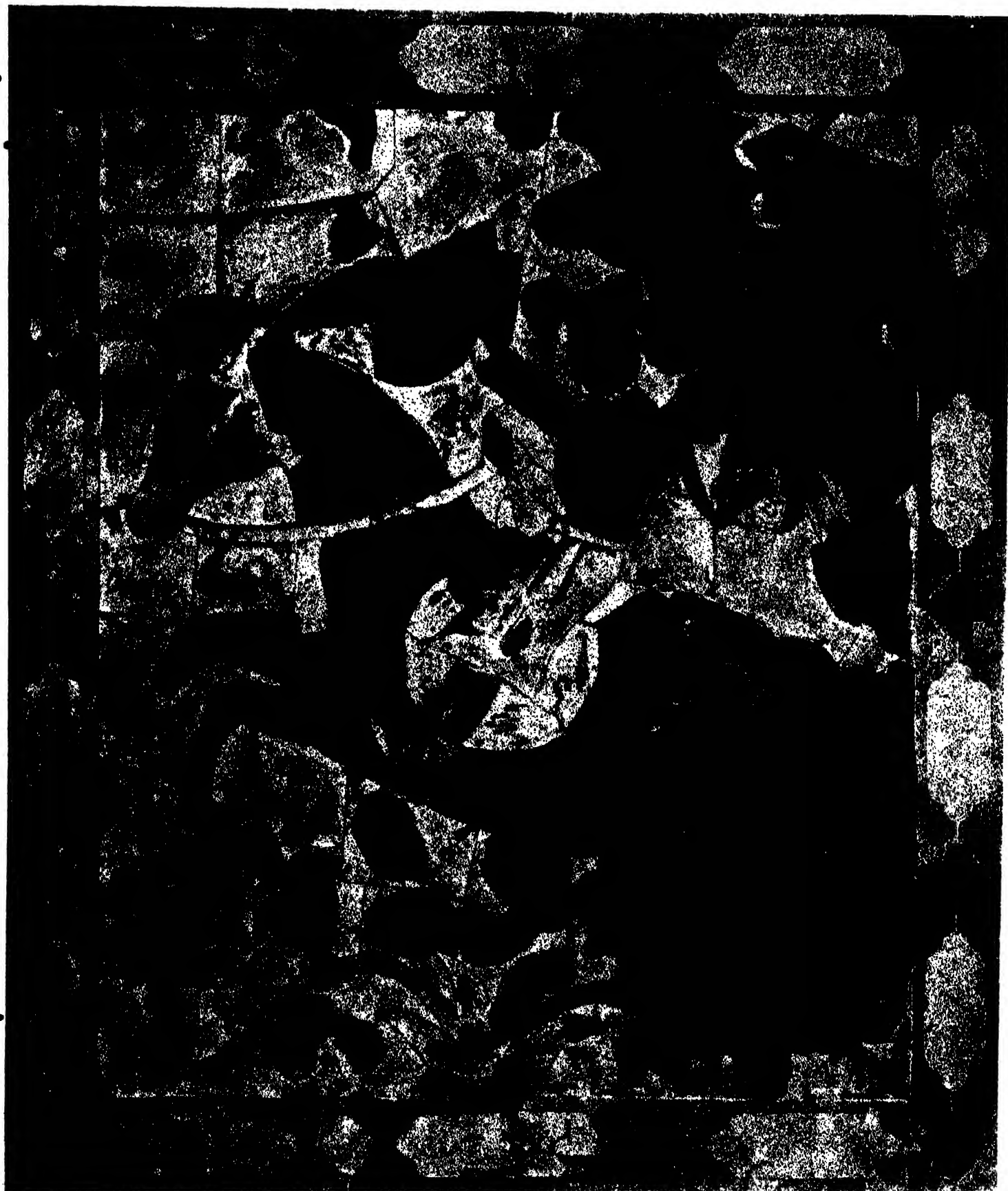




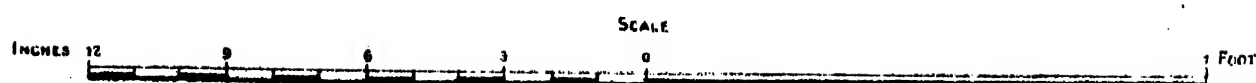
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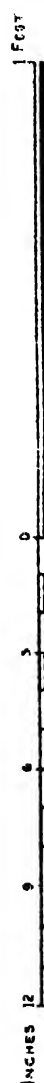






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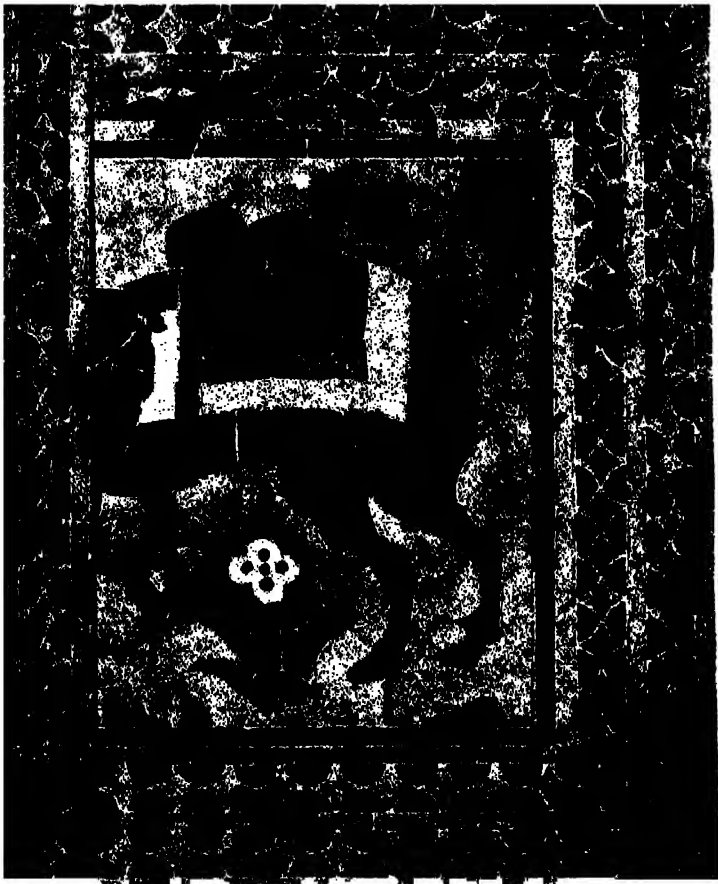
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## CONTENTS.

### TILE-MOSAICS OF THE LAHORE FORT.

BY  
J. PH. VOGEL, PH. D.

Illustrated by seven Page Plates in Colours  
and eight Monochrome Plates.

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# The Journal of Indian Art and Industry.

## TILE-MOSAICS OF THE LAHORE FORT.

By J. PH. VOGEL, PH. D.

SUPERINTENDENT ARCHÆOLOGICAL SURVEY, NORTHERN CIRCLE.

### IV. SPORTS AND PASTIMES.

#### ANIMAL FIGHTS.

From our inspection of the pictured wall of Lahore, it has been noticed that a large number of tile-mosaics relate to animal-fights which were no less favourite an entertainment at the Moghul Court than in ancient Rome. But whereas the Circenses of the Cæsars were chiefly intended to propitiate the populace, the animal combats of Moghul India were meant in the first place for the amusement of the emperor and his court. Hence the scene of such entertainments was the palace, or in the case of elephant fights the sandy ground between the palace and the river. "On a choisi exprès cette place proche de l'eau," says Tavernier,<sup>1</sup> "parce que l'éléphant qui a eu la victoire estant en fureur on n'en pourroit de long-temps venir à bout, si on ne le pousoit dans la rivière, à quoy il faut user d'artifice, en attachant au bout d'une demi-pique des fusées et des petards où l'on met le feu pour le chasser vers l'eau; car quand il est dedans environ deux ou trois pieds il s'apaise incontinent."

It seems that animal fights as a royal amusement were not unknown in India before the advent of the Muhammadans.

But no reference is made to it in indigenous literature. We may assume that in a country where the respect for animal life is carried to such a pitch, there must always have been a strong feeling against such a custom, especially among the cultured classes of society.

It would seem that only under the rule of the Great Moghuls animal fights became a recognized recreation of the royal court. François Bernier<sup>2</sup> has left us the following description of an elephant fight at Delhi which he must have often witnessed during his stay at the court of Shah Jehan and Aurangzeb:—

"Il faut icy vous faire part d'un Divertissement par où finissent ordinairement ces Festes, et qui nous est inconnu en Europe; c'est le combat des Elefans que le Roy, les Dames de la Cour, et les Omerahs voyent de divers appartemens de la Forteresse, et qui se fait devant tout le peuple dans cette grande Place sabloneuse qui regarde la Riviere.

L'on fait une muraille de terre de trois ou quatre pieds de largeur, et de cinq ou six de hauteur; les deux Elefans qui doivent combattre s'en viennent de front, l'un d'un costé de cette muraille, et l'autre de l'autre, chacun ayant deux Conducteurs dessus, afin que si le premier qui est sur les epaules et qui a le grand crochet de fer à la main pour faire tourner l'Elephant à droite et à gauche, vient à tomber, le second qui est sur le derriere se jette aussi-tôt en sa place. Ces quatre Conducteurs animent chacun leur Elefant au combat, et à passer vigoureusement sur son ennemy, tantôt en leur parlant doucement et tantôt en les querellant comme des lâches et les talonnant tres-rudement. Quand ils ont ainsi esté long-temps poussez et animez, alors on voit ces deux grosses masses venir à la muraille, s'aborder lourdement et se donner de si terribles coups de dents, de teste et de trompe, qu'on diroit qu'ils s'iroient crever l'un l'autre. Ce combat continué quelque temps, cesse et recommence par plusieurs fois, jusqu'à ce que la muraille s'estant éboulée, le plus courageux des deux passe sur l'autre, luy fait tourner le dos, le poursuit à coups de dents et de trompe, et s'acharne tellement après, qu'il n'y a pas moyen de les separer; si ce n'est avec des Cherkys qui sont certains feux d'artifice qu'on jette entre-deux; car cet animal est tres-peureux et craint sur tout le feu; d'où vient que depuis qu'on se sert d'armes à feu dans les armées, les Elefans n'y servent presque plus de rien. Veritablement il s'en trouve quelques-uns de ces braves qu'on amene de l'Isle de Ceilan, qui ne sont pas si peureux; mais encore n'est-ce qu'après les avoir des années entieres accoustumez, en leur tirant tous les jours devant eux des mousquets, en leur jettant des petars de papier entre les jambes. Au reste le combat des Elefans ne seroit pas trop desagréable à voir s'il n'étoit un peu trop cruel à cause qu'il arrive souvent que quelques-uns de ces pauvres miserables Conducteurs sont foulez aux pieds et y périssent; car les Elefans dans le combat ont cette malice qu'ils tâchent sur tout de fraper de leur trompe et d'attirer en bas le Conducteur de leur adversaire; et c'est pour cela que le jour que ces pauvres Conducteurs savent qu'ils ont à faire combattre les Elefans, ils disent adieu et à leurs femmes et à leurs enfans, comme s'ils étoient condamnez à la mort:

<sup>1</sup> Tavernier, *Voyages* Vol. II, p. 72, transl. Ball Vol. I, p. 106. Cf. Thevenot Vol. III, pp. 33 and 42, Bernier, *Voyages* Vol. II, p. 10; Constable's edition p. 242.

<sup>2</sup> Bernier, *Voyages* Vol. II, pp. 63 ff.; Constable's edition pp. 276 ff. Cf. Manucci, *Storia del Mogor* (Transl. Irvine) Vol. II, p. 364.



Ce qui les encourage et les console, c'est que quand ils échappent, et qu'ils s'acquittent bien de leur devoir, le Roy augmente leur paye, et leur fait donner sur l'heure un sac de Peyssas, ce qui vient à être environ cinquante francs ; ou s'ils y demeurent, il fait laisser la paye pour la veuve, et l'Office au fils quand il y en a. Un autre malheur accompagne souvent ce combat ; c'est que dans cette grande foule de monde qui s'y trouve ordinairement ; il y en a toujours quelques-uns d'attrapez qui sont renversez par l'Elefant, ou foulez aux pieds des chevaux et des hommes qui s'écartent et fuyent tous tout d'un coup, et tombent les uns sur les autres lors que les Elefans sont en furie, et que l'un poursuit l'autre : de sorte qu'on ne peut voir ce jeu-là de près qu'avec danger. Pour moy, la seconde fois que je le vis, je me repentis assez de m'être si fort aproché, et si je n'eusse eu un bon cheval et deux bons Valets, je crois que l'aurois payé cher aussi bien que beaucoup d'autres."

Another account of an elephant fight in which Aurangzeb displayed great courage, I quote from a native historian. For a translation of the passage I am indebted to my late Assistant Maulwi Nur Bakhsh.

"How the dignified and patient Prince, Muhammad Aurangzeb, stood firm against the onslaught of the elephant Sidhkar, huge as a mountain, and smote with his spear that mad, malignant and unruly beast."<sup>1</sup>

"The Emperor of the age on many a day finds his delight in watching the fights of elephants that resemble wonder-working thunderclouds moving in the heavens"—

"Gigantic are they all, like thunderbolts in action. With their hindquarters hewn of granite, anvilheaded."

"But especially on the auspicious day of Monday—the week-day of the august accession—the sovereign's whole attention is devoted to opening wide the portals of every kind of pleasure, and every cause of delectation ; while neither injury nor harm may reach a living being. Yet this latter is inevitable in the battling of these animals, huge as mountains, and fighting like demons. At times some of the spectators sink into annihilation beneath the limbs of these two four-legged *Besutuns* ;<sup>2</sup> while sometimes these will slay each other through excess of emulation and the fury of their wrath."

"It came to pass on Tuesday the 29th [Zu-l-qa'dah A. H. 1042] that by the Emperor's commands two elephants, of the famous and magnificent royal herd, were set to fight beneath the balcony for public appearance [*jharoka darshan*] of the mansion inhabited by the Emperor in the days when he was a prince. One of these was the tusker Sidhkar, the other with no tusks was named Surat-Sundar : both huge as mountains, swift as clouds, and roaring like thunder, so that from terror at their trumpeting a troubled cry arose in the highest heaven ; and in the field of battle they looked on fire as water, on rivers as a mirage."

"These two gigantic beasts that like the raging hurricane or roaring sea would uproot an opponent's fixed position with one movement, or extinguish an adversary's lamp of life with a single breath—fell to in the field of strife, and with their rock-splitting charges shook the foundations of the earth."

"In their vicious struggles they moved a little way from the far-seeing Emperor's field of view, and continued fighting at the foot of the audience balcony of the palace inside the fort."

"The ruler of the world [Shah Jahan] anxious to see the spectacle, mounted, and accompanied by his good fortune, moving as lord of the luminaries of heaven, started for the spot. A few paces in front of him rode the princes of exalted dignity who became absorbed in viewing this wondrous entertainment. On the right of Sidhkar was that chief star in the mansion of felicity, Muhammad Dard Shikoh, and on the left the jewel of the casket of royalty, Muhammad Shah Shuja' Bahadur ; and the head and source of good fortune, Muhammad Aurangzeb."

"When these two fiery and ferocious beasts drew apart, backing several paces, they left a short space between them, whereupon Sidhkar, seeing his antagonist at a distance, in that vicious condition of passion, kept every moment making charges and violent rushes from excess of rage and anger, and then ran towards that champion of the lists of bravery, Muhammad Aurangzeb. He, that warrior like Rustam and hunter of elephants moved [not] from his place, holding firmly with the hand of heroism the bridle reins of his steed, swift as wind or lightning ; for by reason of its exceeding swiftness"—

"He could not take his saddle from its back,  
Unless his two hands clasped it to his breast.  
Through courage he moved not one hairbreadth from his place  
From facing a torrent he turned not aside.  
From firmness of nature and excessive keenness  
Throughout his body nought moved save his pulse."

"When the elephant had come close, by the aid of heaven and the imperial power of surmounting difficulties, he stretched forth the arm of valour and with his spear wounded that ferocious, diabolical beast on its forehead."

<sup>1</sup> *Badshah Namah*, Vol. I, pp. 489 ff.

<sup>2</sup> *Besutun* (lit. without a pillar) is the name of a mountain in Persia which, it is said, Farhad laboured to dig through to please his beloved Shirin.

"By nature's impulse bravely he behaved,  
[At bare fifteen] when none had looked for it.  
Even Afrasiab at such and age  
To see an elephant, had swooned away."

"The residents of the holy enclosures and the constant attendants at the oratories of mankind breathed out, on behalf of the hand and strong arm of that apple of the eye of sovereignty [Aurangzeb] invoking the averting of danger, and the sound sleepers of the sleep of forgetfulness awoke at the shouting of praise and applause. The spectators were lost in amazement. When the Mighty Lord, His Majesty, the second Lord of the Fortunate Conjunction, in the flower of his youth made the body of a raging tiger food for his blood-drinking and dragon-like sword (as will be here recorded), the display of like prowess by his sons is not to be marvelled at."

"The tiger's cub is e'er a tiger born."

"The more enraged on being wounded, the brute drew nearer intent on mischief. In spite of the kindling and throwing of catherine wheels and rockets—through which the terrestrial globe from the violence of the flames had become a globe of fire—all was in vain. It [the elephant] striking the Prince's horse with its tusks, threw it down. That tiger in the forest of bravery [Aurangzeb] fell from his saddle on to the ground. Promptly and quickly, in a second, he rose with his hand on the hilt of his sword."

"The Prince of exalted rank, Muhammad Shah Shuja' Bahadur, beholding things in such a pass—the way being obstructed by the crowd of people and the great quantity of fireworks and the spreading of their smoke—hastily turned the reins of his bay horse, moving like the heavens, in order to draw near and use his spear. Suddenly, just as he was riding to the attack, a catherine wheel struck the horse on the forehead. It reared, and that priceless person [Shah Shuja'] fell off. Raja Jai Singh, son of Raja Maha Singh, son of Jagat Singh, the eldest son of Raja Man Singh—who from his birth is one of the trusted servants of the court, and sits in the seat of Raja Man Singh—also rode at the elephant. As his horse shied and would not face the elephant, he moved away to the right of it and flung his spear."

"At this moment—when the quiescent souls of the worldly were agitated by grief and the times as well as those belonging to this age were in confusion and reeling in giddiness—His Majesty the King of Kings, in his own pure person, came to the spot and issued an order that the mace-bearers and all the others having the felicity of belonging to his retinue, should make an advance."

"When Surat-Sundar found his opponent in the fight was otherwise engaged, he seized the opportunity and renewed the attack. Sidhkar finding it impossible to turn round, took to flight. Surat-Sundar turned his head to pursue the fugitive and both, not minding ups and downs, fled like the wind."

"The Prince [Aurangzeb], watched by Fortune and protected by the guardianship of the Eternal, acquired a new lease of life by seeing the sun-like countenance of the King of the world and the age. The God-fearing monarch first drew into his loving embrace that newly-grown plant in the garden of sovereignty, the prince Aurangzeb, and by the kiss of affection conferred the adornment of felicity, and favoured him with many kinds of gifts and the title of "Valiant" (*Bahadur*). Then, he [Shah Jehan] showed favour to that apple of the eye of the state, Muhammad Shah Shuja' Bahadur, and opened his pearl-showering lips in words of praise and admiration."

"On Friday the 2nd Zil-Hijjah of the year 1042, equivalent to the 21st of Khurdad, which was the day of weighment<sup>1</sup> of the 15th year of the elephant-overthrowing prince Muhammad Aurangzeb Bahadur, that Potentate and River of gifts [Shah Jehan] caused that star in the mansion of kingship [Aurangzeb] to be weighed in the Hall of Private and Public Audience against red coin [gold] and made over the amount, being 5000 Ashrafi to that fortunate person [Aurangzeb], and exalted that one of lofty disposition with the gift of robes of honour—a jewelled aigrette; a chaplet of pearls adorned with several rubies and emeralds of great price; a jewelled bracelet; an armlet jewelled with diamonds; many kinds of rings set in rubies, cornelians, diamonds and pearls; a jewelled hanger; a *phul* dagger; a jewel-hilted sword; a shield; jewelled belts; a jewelled spear; two gabehaq horses, one of them named Sarfaraz with a jewelled saddle, the other with gold and enamel trappings; the elephant Sidhkar along with a female. The total value of the present was two *lakhs* of rupees."

"Clever writers of Persian and Hindustani produced the story of that doer of Rustam-like deeds [Aurangzeb] both in verse and prose, and filled full the skirt of their expectation with liberal presents. Saidai of Gilan, having the title of Bedil Khan, wrote this man-testing adventure in verse, and laid it before the pure Place of petition [Shah Jehan]. By royal order he was weighed against coin and received the amount equivalent to his weight, namely 5000 rupees."

<sup>1</sup>On this custom cf. Bernier, *Trajaner* Vol. 11, p. 55.

I may mention here that Maulwi Nur Bakhsh has been fortunate enough to obtain at Delhi a manuscript copy of the Persian poem in honour of Aurangzeb's valour by Bedil Khan mentioned in the above passage.

The historical elephant-fight at which Aurangzeb displayed so great courage seems to have been as favourite a subject with the painters as with the poets of the Moghul Court. Recently I have acquired for the Delhi Museum of Archaeology an ancient picture on which the scene is treated with great fidelity. The centre of the picture is occupied by the massive black elephant Sidhkar which is opposed by Aurangzeb seated on his prancing white horse and thrusting his spear in its trunk. In the background the other elephant Surat Sundar is shown running after its opponent, the action being very well expressed by the artist. Shah Jehan with his two sons Dara Shukoh and Shah Shuja, all on horseback, are also visible in the background, the last mentioned evidently coming to the rescue of his brother. Another horseman, probably Raja Jai Singh of Amber, is seen in the foreground ready to attack the elephant with his raised spear. Numerous attendants armed with long sticks, to the end of some of which cressets are attached, surround the group. Shah Jehan and his three sons are not only distinguished by haloes, but each of them has his name written in Persian, so that there cannot be the slightest doubt with regard to the subject of the picture and the identity of the actors.

The Lahore Museum also possesses a sketch illustrating the scene of Aurangzeb's valour above described, but it is evidently a late copy, as in several important points it does not agree as well with the contemporaneous account as the Delhi picture. It presumably was made in Kangra in the 18th century, the names of the persons represented being written not in Persian but in Nagari. The central group of Aurangzeb and the elephants is rendered in very much the same way as on the older picture. But the second elephant is absent. Shah Shuja has been replaced by his brother Murad Bakhsh and a sixth horseman has been introduced who according to the inscription represents Mahabat Khan (Khan Khanan). It will be noticed that the Badshah Namah mentioned neither Murad Bakhsh nor Khan Khanan.

One of the panels (No. 12) on the Lahore Fort also might quite well be taken as an illustration of Aurangzeb's youthful exploit narrated in such flowery style by the author of the Badshah Namah. It shows a horseman facing an elephant, whose attack he calmly awaits with lifted lance. It should be remembered that this panel is found on that part of the Fort wall which was probably built and decorated in the beginning of Shah Jehan's reign, about the same time when the event described above took place.<sup>1</sup>

Abul-fazl<sup>2</sup> relates that the immediate cause of Akbar's last illness was the excitement due to an elephant fight and Prince Khusrau's bad behaviour on that occasion. "The first attack was caused, it is said, by worry and excitement on account of the behaviour of Prince Khusrau at an elephant fight. Salim (Jahangir) had an elephant of the name of Giranbar, who was a match for every elephant of Akbar's stables, but whose strength was supposed to be equal to that of Abrup, one of Khusrau's elephants. Akbar therefore wished to see them fight for the championship, which was done. According to custom, a third elephant, Rantahman, was selected as *tabanchah*, i.e., he was to assist either of the two combatants when too severely handled by the other. At the fight, Akbar and Prince Khurram (Shah Jehan) sat at a window, whilst Salim and Khusrau were on horseback in the arena. Giranbar completely worsted Abrup, and as he mauled him too severely, the *tabanchah* elephant was sent off to Abrup's assistance. But Jahangir's men, anxious to have no interference, pelted Rantahman with stones and wounded the animal and the driver. This annoyed Akbar, and he sent Khurram to Salim to tell him not to break the rules, as in fact all elephants would once be his. Salim said that the pelting of stones had never had his sanction, and Khurram, satisfied with the explanation, tried to separate the elephants by means of fireworks, but in vain. Unfortunately Rantahman also got worsted by Giranbar, and the two injured elephants ran away, and threw themselves into the Jamnah. This annoyed Akbar more; but his excitement was intensified when at that moment Khusrau came up, and abused in unmeasured terms his father in the presence of the emperor. Akbar withdrew, and sent next morning for 'Ali,<sup>3</sup> to whom he said that the vexation caused by Khusrau's bad behaviour had made him ill.

An inspection of the tile-mosaics will show how well they agree with the contemporaneous accounts above quoted, though we must of course make allowance for their primarily decorative character. They show us the various stages of the combat. In most cases each elephant is mounted by two men, in accordance with Bernier's description, and on some panels we notice one or two footmen who are trying to separate the animals by means of a cross-shaped cresset or catherine wheel (Persian *charkhi*). This instrument, an invention of Akbar, is described by Abul-fazl<sup>4</sup> in the following terms:

<sup>1</sup> The inscription on the Hathi Pol which records the construction of the Shah (or Saman) Burj is dated in the 6th year of Shah Jehan's reign or A.H. 1041 (A.D. 1631), whilst the elephant fight, at which Aurangzeb distinguished himself, took place in A.H. 1043. It is however possible that at the time when the inscription was recorded the decorative work was yet to be completed.

<sup>2</sup> *Ain-i-Akbari* (Blochmann) Vol. I, p. 467. This agrees with Elliot, *History of India* Vol. VI, pp. 168 f.

<sup>3</sup> Hakim 'Ali of Gilau, surnamed *Jalims-us-samawi* "the Jalous of the age" was Akbar's physician.

<sup>4</sup> *Ain-i-Akbari* (ed. Blochmann) Vol. I, p. 137.



"The charkhi is a piece of hollowed bamboo, half a yard and two tassujes long, and has a hole in the middle. It is covered with sinews and filled with gunpowder, an earthen partition dividing the powder into two halves. A fuze wrapped in paper, is put into each end. Fixed into the hole of the bamboo at right angles is a stick, which serves as a handle. Upon fire being put in both ends, it turns round, and makes a frightful noise. When elephants fight with each other, or are otherwise unruly, a bold man on foot takes the burning bamboo into his hand, and holds it before the animals, when they will get quiet. Formerly, in order to separate two elephants that were fighting, they used to light a fire; but people had much trouble, as it seldom had the desired effect. His Majesty invented the present method, which was hailed by all."

It seems that under the later Moghuls elephant fights fell into disuse owing to the poverty of the court. Mention is made of one held at Agra on the 8th August 1712, in the reign of Jahandar Shah.<sup>1</sup> The custom was revived by the Nawabs of Oudh. Bishop Heber<sup>2</sup> on his visit to Lucknow in October 1824, notes: "I had the usual compliment paid me of an offer to have a fight of animals under my window at breakfast, which I declined. It is a sight that religious persons among the Musulmans themselves condemn as inhuman, and I did not want to be reckoned less merciful to animals than their own Moullahs. Nor was the King, who is himself pretty well tired of such sights, displeased, I found, that his elephants and rams had a holiday."

• We have noticed on the Fort wall a fine panel (No. 39) showing a group of four camels, two of which are engaged in a fierce fight. We learn from Abul-fazl that camel-fights also were among the entertainments of the Moghul court.

"From the time His Majesty paid regard to the affairs of the state, he has shown a great liking for this curiously shaped animal; and it is of great use for the three branches of the government, and well known to the emperor for its patience under burdens, and for its contentment with little food, it has received every care at the hands of His Majesty. The quality of the country breed improved very much, and Indian camels soon surpassed those of Iran and Turan."

• From a regard to the dignity of his court, and the diversion of others, His Majesty orders camel-fights, for which purpose several choice animals are always kept in readiness. The best of these *khāṣṣah* camels, which is named *Shāhpasand* ("approved of by the Shah"), is a country bred twelve years old: it overcomes all its antagonists, and exhibits in the manner in which it stoops down and draws itself up every finesse of the art of wrestling."<sup>3</sup>

The occurrence of a panel with two fighting bulls (No. 17) would perhaps justify us in including bull-fights also among the recreations of Moghul India, though I have not found them mentioned in literature. I may point out that the same subject occurs in a wall-painting at Fatehpur-Sikri.<sup>4</sup>

• "I have noticed in the course of this paper that antelopes also were kept for fighting purposes. That even this kind of sport was not devoid of danger appears from a note in the *Tarikh-i-Haqqi* which relates that in A.H. 1004 (A.D. 1595) "the King [Akbar], while witnessing an antelope-fight, was wounded in the thigh by one of their horns, which penetrated very deep. Great alarm was felt throughout the country, but after retiring for a few days to the inner apartments, and seating himself on the carpet of affliction, he recovered, by the blessing of God, and restored comfort to the hearts of all the world."<sup>5</sup>

To conclude my account of the animal fights in vogue at the Moghul Court, I quote the following curious note from the *Ain-i-Akbari*.<sup>6</sup>

"Frogs also may be trained to catch sparrows. This looks very funny.

• His Majesty, from curiosity, likes to see spiders fight, and amuses himself in watching the attempts of the flies to escape, their jumps, and combats with their foe.

I am in the power of love; and if I have thousands of wishes, it is no crime; and if my passionate heart has an (unlawful) desire, it is no crime.

• And in truth, His Majesty's fondness for leopards is an example of the power of love, and an instance of his wonderful insight.<sup>7</sup>

It would take me too long to give more details. It is impossible to enumerate all particulars; hence it is better to go to another subject."

<sup>1</sup> Valentijn, *Out-en-Nieuw Oost-Indiën*. Amsterdam 1726, Vol. IV., Part II. p. 299.

<sup>2</sup> B. Heber, *Narrative of a journey through the upper Provinces of India*, London 1828, Vol. II, p. 74.

<sup>3</sup> *Ain-i-Akbari* (Blochmann) p. 143.

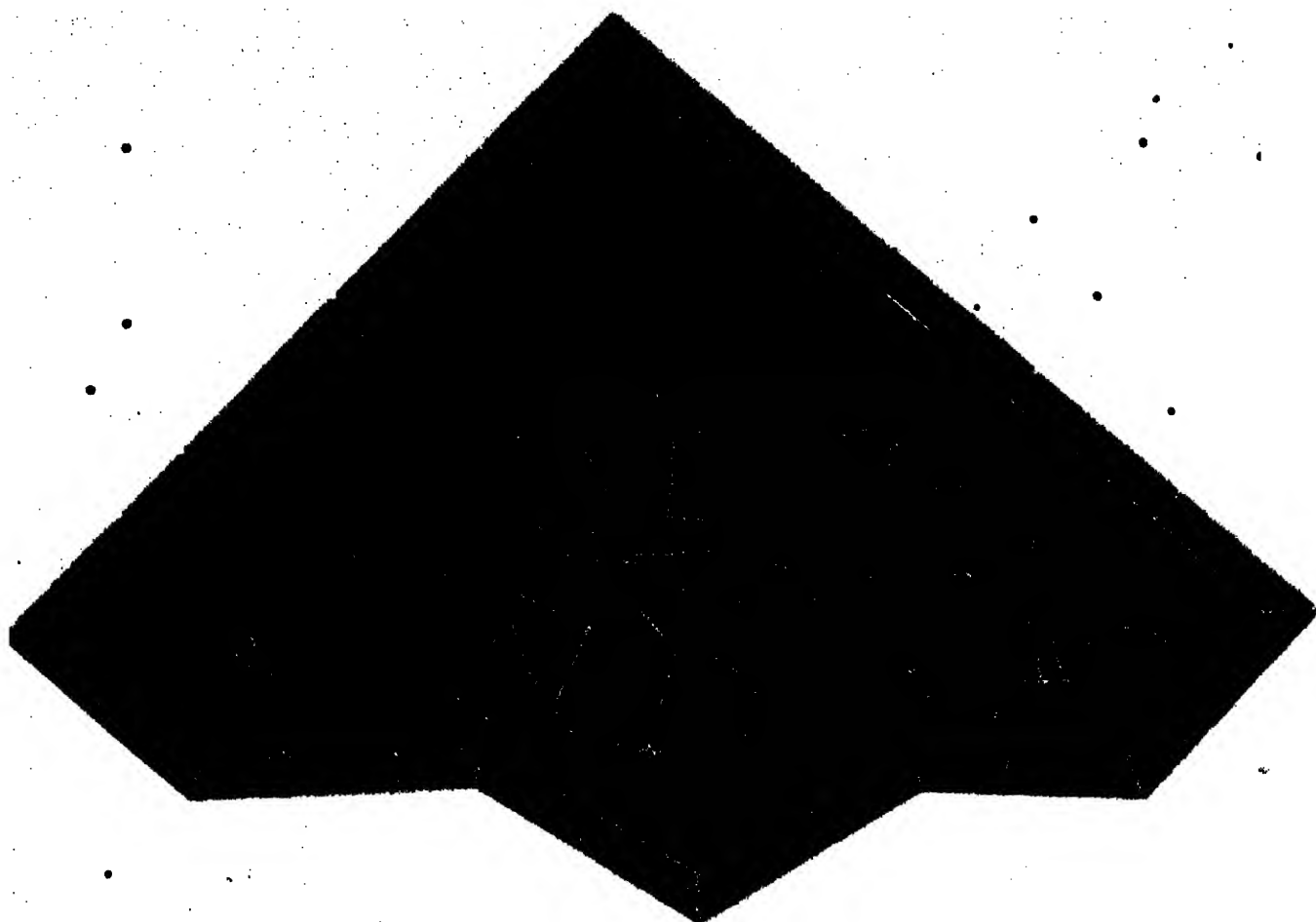
<sup>4</sup> E. W. Smith, *Moghul Architecture of Fatehpur Sikri* Part I, plate VIII. Bernier, *Voyages* Vol. II, pp. 421. speaks of "ces grandes Buffles de Bengale avec leurs prodigieuses cornes à combattre le Lion ou le Tygre."

<sup>5</sup> Elliot, *History of India* Vol. VI, p. 198.

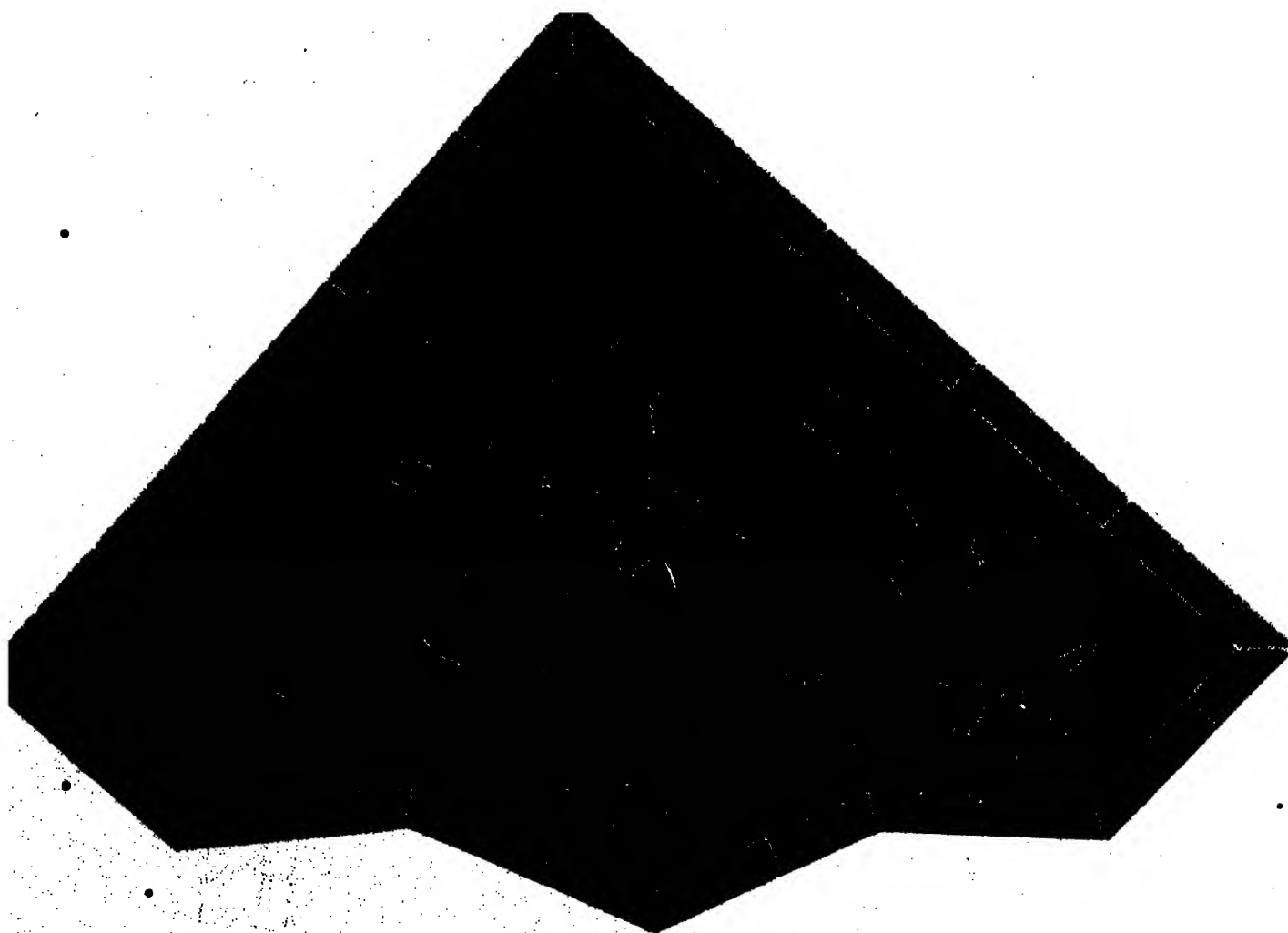
<sup>6</sup> *Ain-i-Akbari* (Blochmann) Vol. I, p. 260.

<sup>7</sup> The Historian may thank Abul-fazl for having preserved this little trait of Akbar's character. In several places of the *Ain*, Abul-fazl tries hard to ascribe to His Majesty higher motives, in order to bring the emperor's passion for hunting in harmony with his character as the spiritual guide of the nation. But as "higher motives" were insufficient to explain the fancy which Akbar took in the frog and spider fights, Abul-fazl has to recognise the fact that peculiar leanings will lead even a sensible man to actions and to actions opposed to the general tenor of his character." (Blochmann).

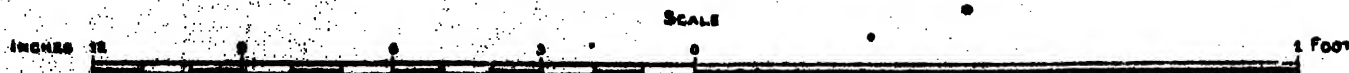




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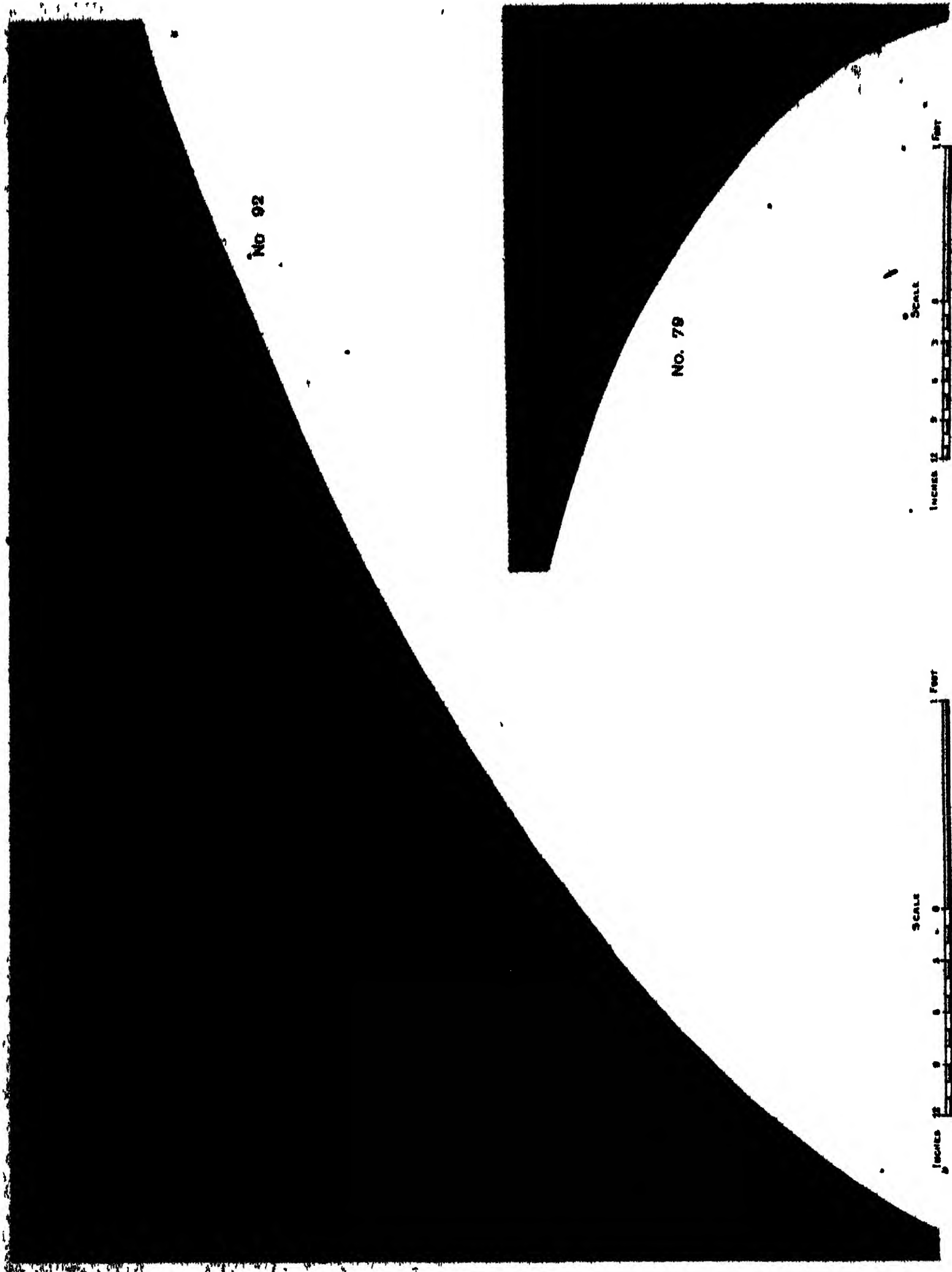


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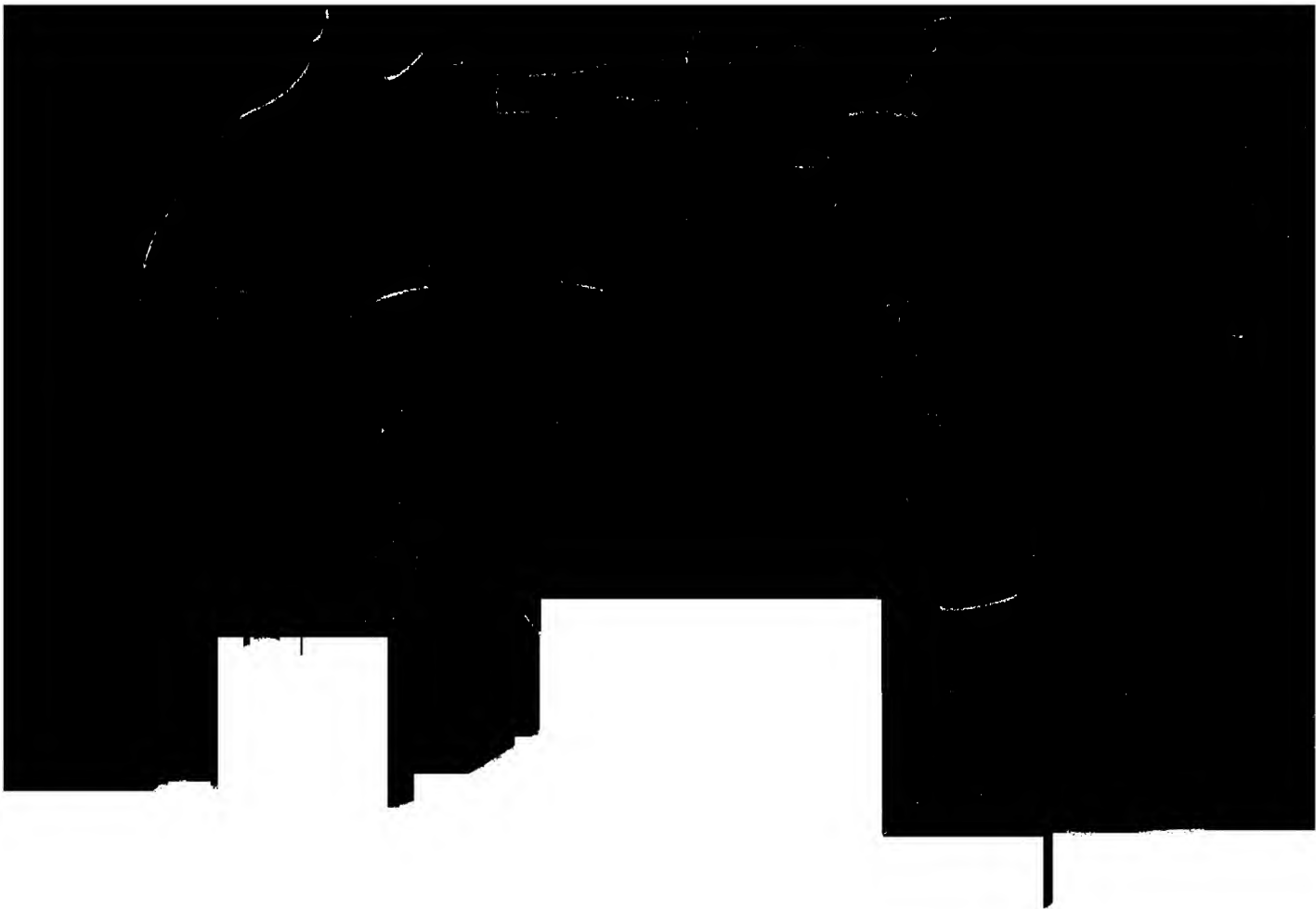
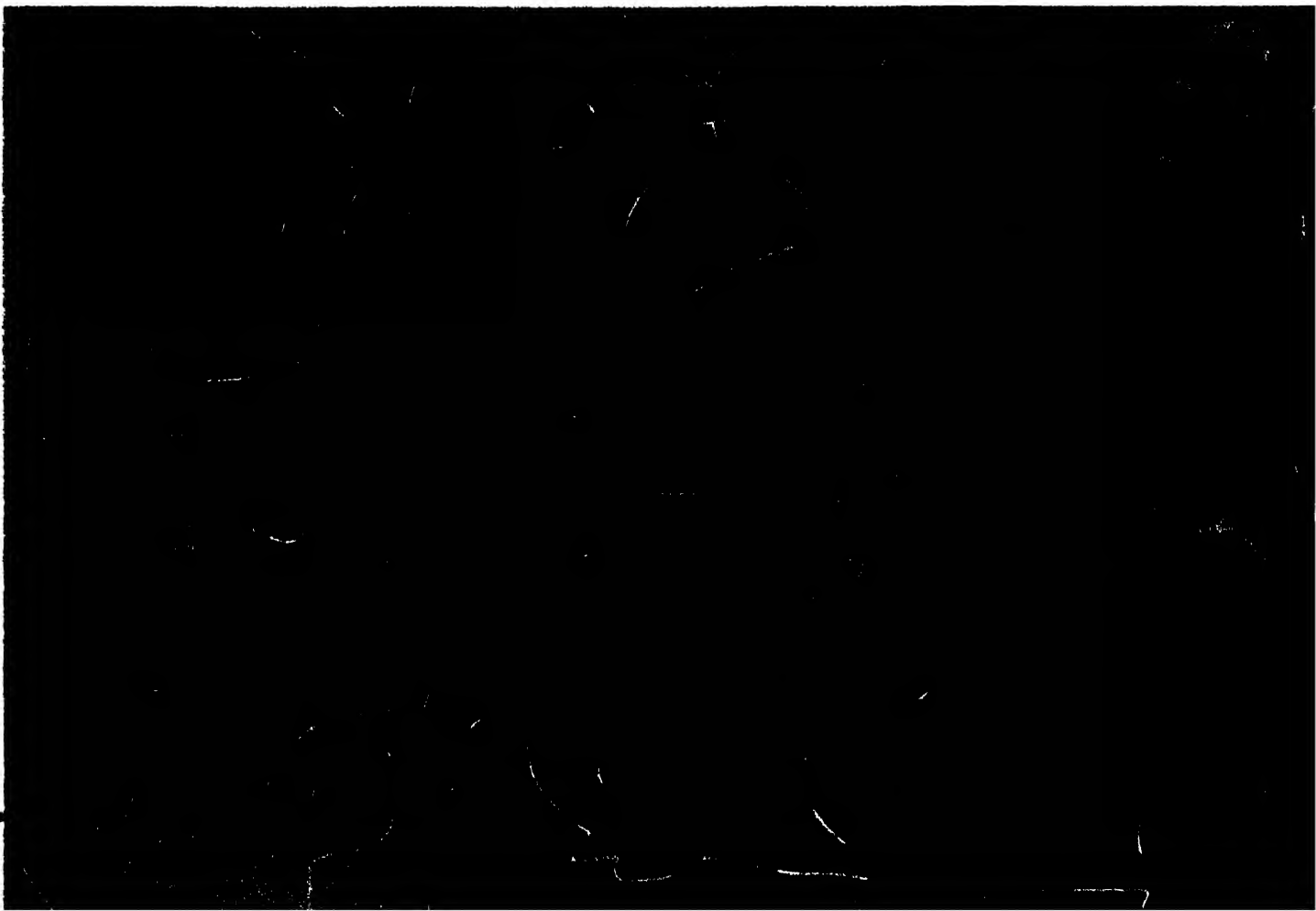


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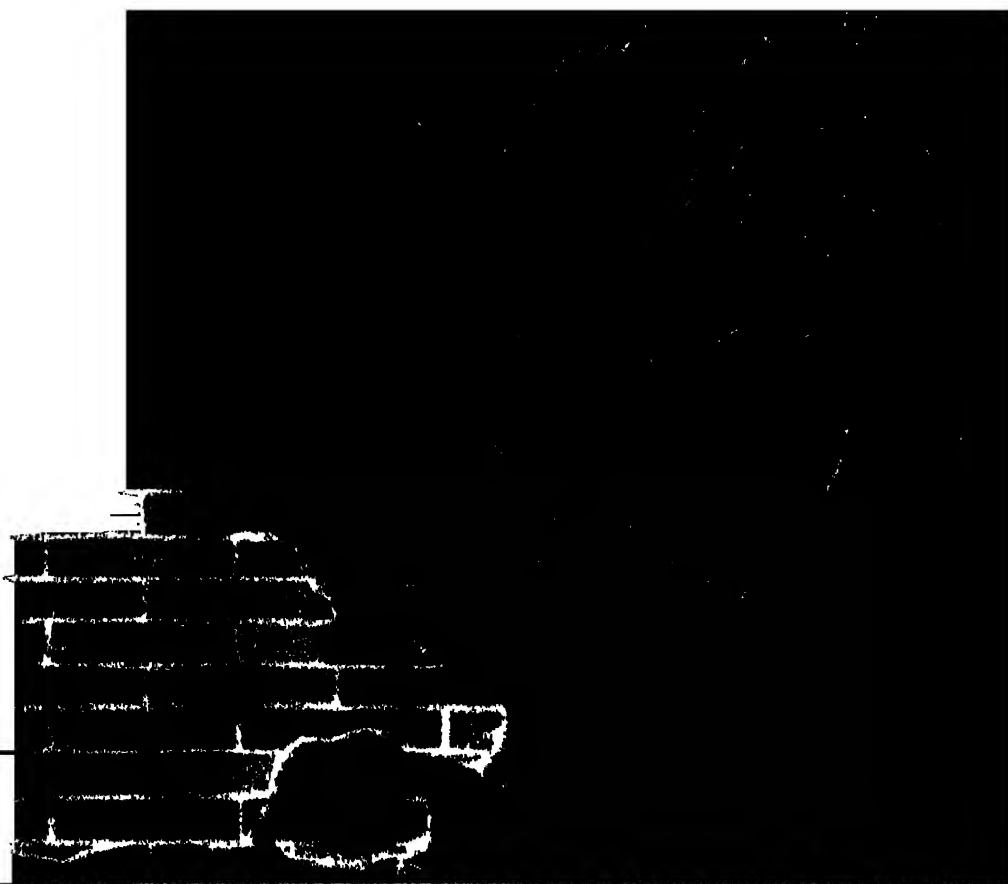


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No. 84.

SCALE



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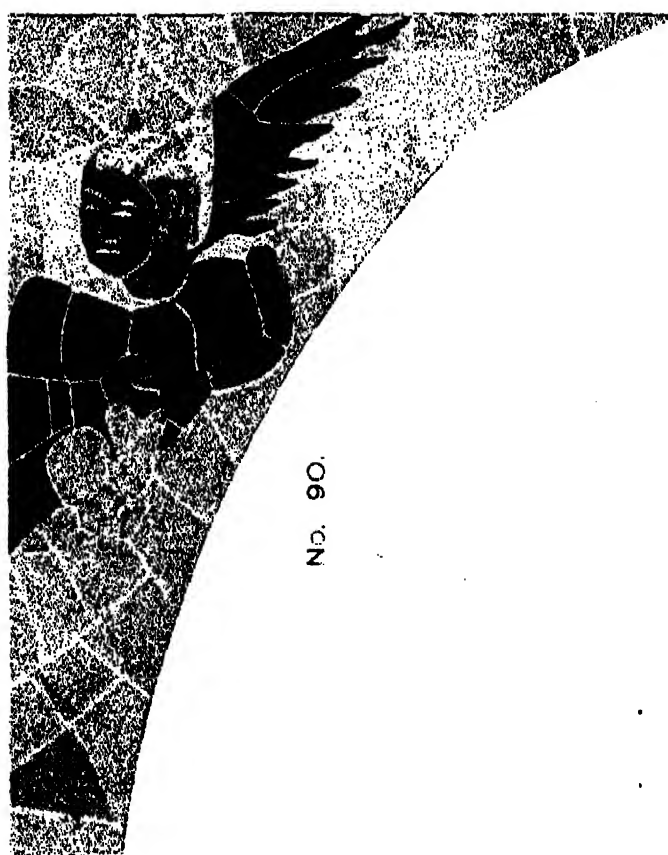
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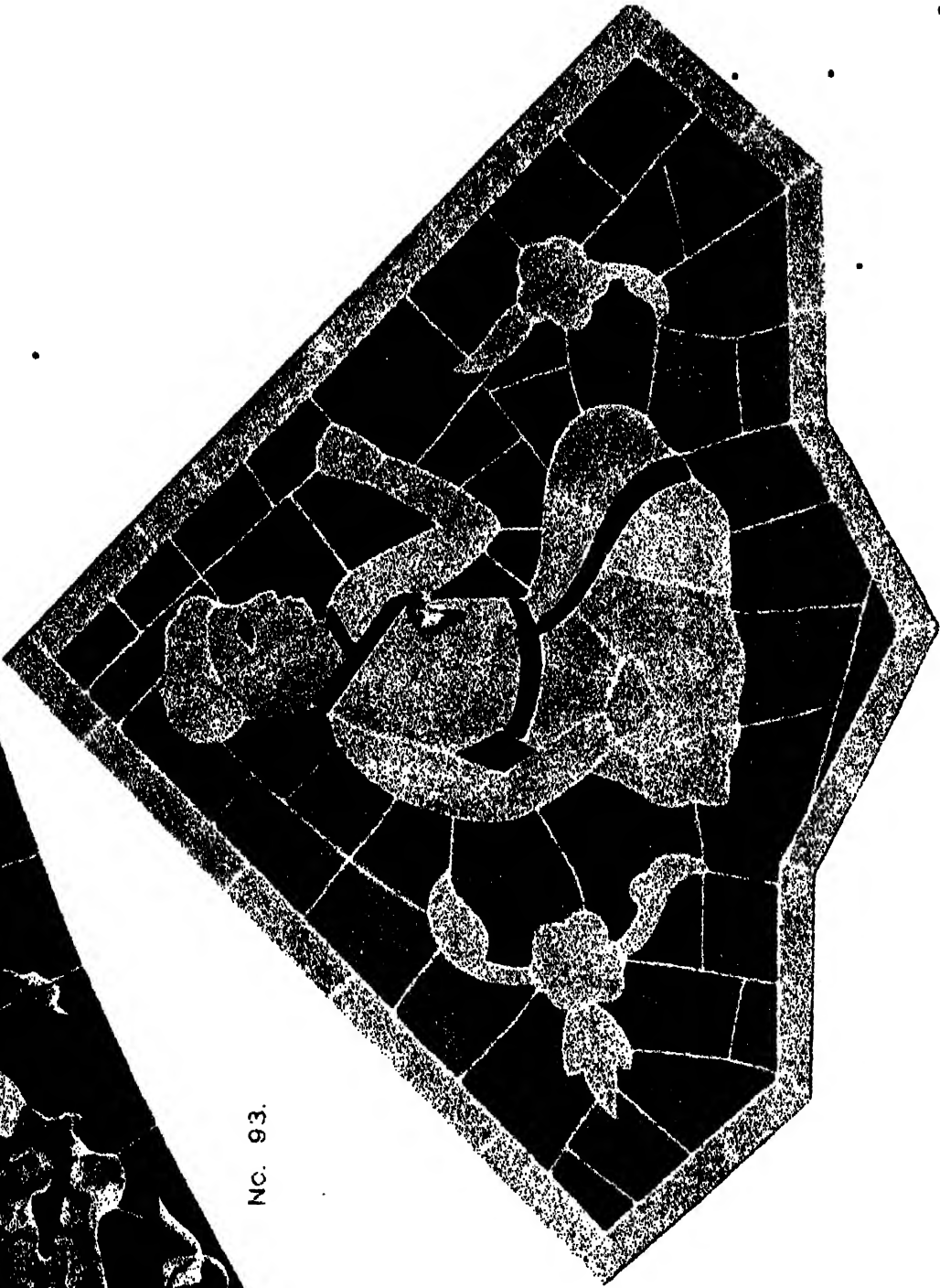




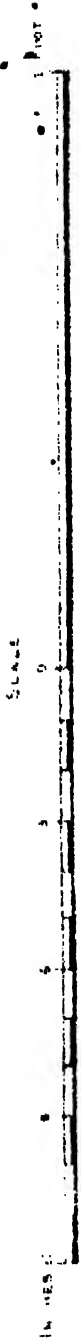




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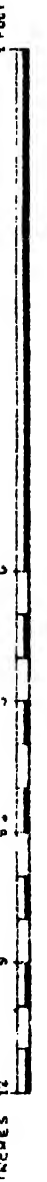
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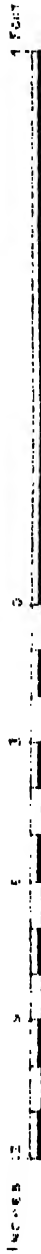






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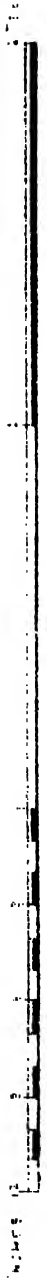






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No. 46.

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